

NOTICES OF FINAL RULEMAKING

The Administrative Procedure Act requires the publication of the final rules of the state's agencies. Final rules are those which have appeared in the *Register* first as proposed rules and have been through the formal rulemaking process including approval by the Governor's Regulatory Review Council or the Attorney General. The Secretary of State shall publish the notice along with the Preamble and the full text in the next available issue of the *Register* after the final rules have been submitted for filing and publication.

NOTICE OF FINAL RULEMAKING

TITLE 2. ADMINISTRATION

CHAPTER 5. DEPARTMENT OF ADMINISTRATION PERSONNEL ADMINISTRATION

[R07-90]

PREAMBLE

- 1. Sections Affected**
R2-5-902
- Rulemaking Action**
Amend
- 2. The statutory authority for the rulemaking, including both the authorizing statute (general) and the statutes the rule is implementing (specific):**
Authorizing statute: A.R.S. § 41-763(6)
Implementing statutes: A.R.S. §§ 41-763.04 and 41-783(14)
- 3. The effective date of the rule:**
May 5, 2007
- 4. A list of all previous notices appearing in the Register addressing the final rule.**
Notice of Rulemaking Docket Opening: 11 A.A.R. 5411, December 23, 2005
Notice of Proposed Rulemaking: 12 A.A.R. 4286, November 24, 2006
- 5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:**
Name: Christine Bronson, Human Resources Consultant
Address: 100 N. 15th Ave., Ste. 261
Phoenix, AZ 85007
Telephone: (602) 364-1693
Fax: (602) 542-2796
- 6. An explanation of the rule, including the agency's reasons for initiating the rule:**
R2-5-902 contains procedures for conducting a reduction in force, including the reasons for a reduction, order of separation of non-permanent status employees, calculation of retention points, resolution of ties, offer of position, and employee requests for review. The Department amended the rule to be consistent with A.R.S. § 41-763.04, which requires that the procedures provide for a reduction in force to be limited to a single agency. This rule also clarifies a former employee's eligibility for reemployment, updates the calculation of retention points to the 5-point rating scale for state service employee performance evaluations, adds service while on special detail as a period of service for the purpose of calculating retention points for length of service, and adds alternative job offers in lieu of an employee being reduced in grade as the result of a reduction in force. The amended rule also conforms to current rulemaking format and style requirements.
- 7. A reference to any study relevant to the rule that the agency reviewed and either relied on its evaluation of or justification for the rule or did not rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, any analysis of each study, and other supporting material:**
The agency did not review any study relevant to the rule.
- 8. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:**

Notices of Final Rulemaking

Not applicable

9. **The summary of the economic, small business, and consumer impact:**

This rule does not directly impact small businesses or consumers. The economic impact would be on any agency facing the need to reduce the workforce for any of the reasons outlined in R2-5-902(A)(1). The type and extent of an economic impact can be determined only when a specific reduction is planned and cannot be pre-determined.

10. **A description of the changes between the proposed rule, including supplemental notices, and final rule (if applicable):**

Minor technical and grammatical changes were made at the suggestion of Governor’s Regulatory Review Council (G.R.R.C.) staff.

11. **A summary of the comments made regarding the rule and the agency response to them:**

As part of the initial rulemaking process, the agency solicited input from ADOA Personnel Managers and staff assigned to the satellite Human Resources (HR) offices. Following submission of the Notice of Proposed Rulemaking, no comments were received. An oral proceeding was not scheduled regarding the rule and no additional comments were received.

12. **Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:**

None

13. **Incorporations by reference and their location in the rule:**

None

14. **Was this rule previously made as an emergency rule?**

No

15. **The full text of the rule follows:**

TITLE 2. ADMINISTRATION

CHAPTER 5. DEPARTMENT OF ADMINISTRATION
PERSONNEL ADMINISTRATION

ARTICLE 9. SEPARATIONS

Section

R2-5-902. Reduction in Force

ARTICLE 9. SEPARATIONS

R2-5-902. Reduction in Force

A. General.

1. An agency head shall submit to the Director a proposal to conduct a reduction in force ~~when~~ if required by for one or more of the following reasons:
 - a. ~~A lack~~ Lack of funds or work;
 - b. ~~The abolition~~ Abolition of one or more positions;
 - c. ~~A material~~ Material change in job duties or agency organization;
 - d. ~~The introduction~~ Introduction of a cost reduction initiative;
 - e. ~~A Lack of need in~~ a receiving agency has no need for the position or positions transferred under R2-5-208(B)(4)(a); or
 - f. ~~A lack~~ Lack of a vacant position to revert an employee on promotional probation.
2. ~~The Director may limit a reduction in force to a single agency. An agency may limit a reduction in force to an organizational unit or agency operations within a geographic area.~~
3. ~~An agency head shall submit an agency the proposal for a reduction in force at least 30 working days before the proposed effective date of the proposed reduction in force. The proposal shall indicate the reason for the reduction, the affected organizational unit, the geographical area, if applicable, and the effective date of the reduction. If circumstances beyond the agency’s control do not permit at least 30 working days’ notice, the agency head shall provide notice submit the proposal as soon as it the agency head is aware of the necessity for a reduction in force.~~
3. An agency head shall include all of the following in the proposal for a reduction in force:
 - a. The reason for the reduction in force;
 - b. The proposed scope of the reduction in force, which shall be limited to either:
 - i. The agency;

Notices of Final Rulemaking

1. A score of ~~“8”~~ “5.00” receives 60 retention points.
 2. A score of ~~“7”~~ at least “4.33” but less than ~~“8”~~ “5.00” receives 48 retention points.
 3. A score of ~~“6”~~ at least “3.67” but less than ~~“7”~~ “4.33” receives 36 retention points.
 4. A score of ~~“5”~~ at least “3.00” but less than ~~“6”~~ “3.67” receives 24 retention points.
 5. A score of ~~“4”~~ at least “2.50” but less than ~~“5”~~ “3.00” receives 12 retention points.
 6. A score of ~~“3”~~ at least “2.00” but less than ~~“4”~~ “2.50” receives 1 retention point.
 7. A score of less than ~~“3”~~ “2.00” receives 0 retention points, ~~and the employee shall be placed at the bottom of a retention list.~~
- D.** Calculation of retention points for length of service. Each permanent status employee shall ~~earn~~ receive 1 retention point for each credited month of state service in the employee’s current class series during the 60 months before the proposed effective date of the reduction in force implementation date as follows:
1. ~~To receive credit for a month, Except as provided in subsection (D)(3), an employee shall receive credit for a month of state service if the employee must have been was in a pay status for at least 1/2 of the employee’s working days in that month.~~
 2. ~~A period of service as a state service employee before a separation shall count only if the separation was less than two years and was not the result of disciplinary action.~~
 - 2.3. ~~The following periods during the 60 months before the reduction in force shall count:~~ An employee shall receive credit for the periods listed below, provided the employee meets the pay status requirement under subsection (D)(1):
 - a. ~~State service as a provisional, seasonal, temporary, or limited, or clerical pool employee that is credited toward satisfying a subsequent original probationary requirement;~~
 - b. ~~Military leave with or without pay;~~
 - e-b. ~~Service on mobility assignment;~~
 - c. Service on special detail;
 - d. ~~Continuous uninterrupted service in a position that is transferred to state service by legislative action or otherwise from a budget unit of the state; and~~
 - e. ~~Family and Medical Leave Act leave with or without pay. Service as a state service employee before a separation only if the separation was less than two years and not the result of disciplinary action.~~
 3. An employee shall receive credit for the periods listed below, regardless of the employee’s pay status:
 - a. Military leave; and
 - b. Family and Medical Leave Act leave.
- E.** Resolution of ties. An agency head shall break ~~ties~~ any tie in total retention points in the following manner and order:
1. The employee with the highest average performance evaluation during the past 24 months shall be given preference.
 2. If a tie continues to exist, the employee with the highest total number of retention points for state service shall be given preference.
 3. If a tie continues to exist, ~~an~~ the agency head shall retain the employee ~~with~~ who has the earlier state service hire date of record.
 4. If a tie continues to exist, ~~an~~ the agency head shall break the tie by lot.
- F.** Offer of position.
1. An agency head shall ~~give~~ provide written notice at least five working days in advance to each employee identified for transfer, reduction, or separation. If circumstances beyond the agency’s control do not permit at least five working days’ notice, the agency head shall provide notice as soon as ~~it~~ the agency head is aware of the necessity to transfer, reduce, or separate the employee.
 2. The notice shall include:
 - a. The reason for and effective date of the action;
 - b. ~~The~~ A job offer, if any, including the salary, location of the position, and supervisor’s name;
 - c. The availability of reduction in force procedures and records for review, with references to relevant statutes and rules;
 - d. The employee’s right to request a review of the ~~action~~ determination as provided in subsection (G); and
 - e. The employee’s reemployment or repromotion rights, ~~if~~ as applicable.
 3. An agency head shall ~~make offer~~ offer a position ~~offer~~ to an employee identified for transfer, reduction, or separation with the highest number of points on the retention point list in descending order as follows:
 - a. ~~Retention in the current position.~~
 - b-a. If a position exists and an employee possesses the required knowledge, skill, and ability for the ~~class~~ position, an agency head shall make the single best offer, in terms of pay grade, within the agency of:
 - i. A permanent position at the same or lower pay grade in the same class series as the employee’s present permanent status position;
 - ii. A permanent position at the same or lower pay grade in ~~the~~ any class series in which the employee has held permanent status during the past five years; or
 - iii. If both positions described in subsections ~~(3)(a)~~ (F)(3)(a)(i) and ~~(3)(b)~~ (F)(3)(a)(ii) are available, the position

Notices of Final Rulemaking

- ~~covered by (3)(a) described in subsection (F)(3)(a)(i).~~
 - b. If the offer under subsection (F)(3)(a) is a position at a lower pay grade, the agency head shall provide the employee the option of accepting:
 - i. A vacant, funded, permanent position at the employee's present pay grade in a class series in which the employee has never held permanent status for which the employee is qualified; or
 - ii. A vacant limited, temporary, or part-time position at the employee's present pay grade for which the employee is qualified.
 - 4. An employee shall possess the knowledge, skill, and ability required when the position was last filled, unless the Director grants an exception.
 - 5. Any job offer shall contain a ~~limit~~ time period of not less than three working days in which the employee may accept the offer. Failure of an employee to reply in writing within the stated time ~~limit~~ period, or failure to accept a ~~the~~ job offer, shall constitute a resignation. An employee may accept a job offer and retain the right to request a review of the ~~reduction in force~~ determination.
 - 6. If no position exists, ~~an~~ the agency head shall separate an employee without prejudice.
- G. Employee request for review.
- 1. An employee may request a review of the following determinations made during a reduction in force:
 - a. Calculation of the employee's retention points;
 - b. A job offer resulting in the employee's transfer or reduction; and
 - c. Notification of the employee's separation.
 - ~~1.2.~~ Within three working days of receipt of a ~~reduction in force~~ determination notice, unless a longer ~~time~~ period is authorized by an agency head, an employee may submit a written request to the agency head for a review of the ~~procedure resulting in the employee's transfer, reduction, or separation due to a reduction in force~~ determination. The request for review shall be based upon an error, contain specific information concerning the error involved, and include a proposed resolution of the problem.
 - ~~3.~~ The agency head shall review the request and respond to the employee within five working days after receipt of the request.
 - ~~2.4.~~ An agency head may postpone any portion of a reduction in force until completion of an employee ~~requested~~ request for review.

NOTICE OF FINAL RULEMAKING

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 11. STATE BOARD OF DENTAL EXAMINERS

[R07-86]

PREAMBLE

- 1. Sections

R4-11-101	<u>Affected Rulemaking Action</u>
R4-11-502	Amend
R4-11-601	New Section
R4-11-609	Amend
R4-11-1204	New Section
	Amend
- 2. The statutory authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):
 - Authorizing statutes: A.R.S. §§ 32-1207(A)(1), (4), (7) and (B)(3)
 - Implementing statutes: A.R.S. §§ 32-1281, 32-1289, and 32-1291
- 3. The effective date of the rules:
 - May 5, 2007
- 4. A list of all previous notices appearing in the Register addressing the final rules:
 - Notice of Rulemaking Docket Opening: 12 A.A.R. 3379, September 15, 2006
 - Notice of Proposed Rulemaking: 12 A.A.R. 3782, October 13, 2006
- 5. The name and address of agency personnel with whom persons may communicate regarding the rules:
 - Name: Julie N. Chapko, Executive Director

Notices of Final Rulemaking

Address: Arizona State Board of Dental Examiners
5060 N. 19th Ave., Ste. 406
Phoenix, AZ 85015-3214

Telephone: (602) 242-1492

Fax: (602) 242-1445

E-mail: jchapko@azbodex.com

6. An explanation of the rules, including the agency's reasons for initiating the rules:

In 2004, the 46th legislature passed H.B. 2194. H.B. 2194 made changes to A.R.S. § 32-1281 requiring the Board to make rules regarding a dental hygienist's use of emerging scientific technology and prescribing the necessary training, experience, and supervision to operate newly developed scientific technology. H.B. 2194 also made changes to A.R.S. § 32-1289 allowing affiliated practices between dentists and dental hygienists. A.R.S. § 32-1289 specifies the requirements for affiliated practice relationships and requires the Board to make rules to implement the statute. The rules will amend R4-11-101 (Definitions), R4-11-601 (Duties and Qualifications), and R4-11-1204 (Dental Hygienists) and make two new Sections: R4-11-502 (Affiliated Practice) and R4-11-609 (Affiliated Practice). R4-11-101 will be amended to add new definitions for "polish" and "emerging scientific technology" and amend the definition of "recognized continuing dental education." A.R.S. § 32-1291 allows a dental assistant to polish the natural and restored surfaces of teeth under the general supervision of a dentist, but the statute does not define polish. The Board feels a definition for polish is necessary.

A.R.S. § 32-1281(D) mandates that the Board write rules to prescribe the circumstances under which a licensed dental hygienist may use emerging scientific technology, but the statute does not define emerging scientific technology. The Board feels a definition for emerging scientific technology is necessary. During the 47th legislative session, S.B. 1079 moved the definitions for "recognized dental school," "recognized dental hygiene school," and "recognized denturist school" from A.R.S. § 32-1201(15), (14), and (16) to A.R.S. § 32-1201(17), (16), and (18), respectively. The renumbering in statute requires the Board to make corresponding citation changes in R4-11-101 (Definitions) and in R4-11-601(C) and (E). R4-11-601 will also be amended to add a subsection (H) that will specify the qualifications required of a dental hygienist to use emerging scientific technology. R4-11-1204 is being amended to allow a dental hygienist who obtains continuing education credits to meet the requirements for an affiliated practice relationship to apply those credit hours to the continuing education requirements specified in R4-11-1204.

R4-11-502, a new Section, will specify the requirements for a dentist in an affiliated practice relationship with a dental hygienist. R4-11-609, a new Section, will specify the requirements that a dental hygienist must meet to perform dental hygiene services under an affiliated practice relationship with a dentist. The rules will include format, style, and grammar necessary to comply with the current rules of the Secretary of State and Governor's Regulatory Review Council.

The Board, dentists, dental hygienists, dental assistants, and the public benefit from rules that are clear, concise, and understandable. The rules benefit the public health and safety by clearly establishing the standards for dental and dental hygiene practice, including the development and use of affiliated practice relationships and the use of emerging technologies.

7. A reference to any study relevant to the rules that the agency reviewed and either relied on or did not rely on in its evaluation of or justification for the rules, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

The agency did not review or rely on any study relevant to these rules.

8. A showing of good cause why the rules are necessary to promote a statewide interest if the rules will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

9. The summary of the economic, small business, and consumer impact:

The rules will impact the Board, dentists, dental hygienists, dental assistants, and the public. The rules' impact on the Board will be the usual rulemaking-related costs, which are minimal. The Board estimates the rules will have minimal economic impact on dentists, dental hygienists, and dental assistants. The rules have no economic impact on the public.

The rules will have minimal economic impact on dental assistants. The addition of the definition for "polish" in the rules clarifies the fact that dental assistants are allowed by A.R.S. § 32-1291 to assist a dentist in performing coronal polishing once the dental assistant has passed a Board approved examination. Dental assistants who complete training and pass the examination may receive increased wages for performing coronal polishing. There is no fee paid to the Board for certification to perform polishing, but the dental assistant must pay an examination fee to the Dental Assisting National Board to become certified. To date, approximately 220 individuals have completed the requirements for certification. Becoming certified is not required, unless a dental assistant wants to perform polishing services. The cost of the examination is minimal and is absolutely necessary before performing any polishing. The Board estimates that the minimal cost to become certified is offset by the possible increased wages that may be received after certification.

Notices of Final Rulemaking

The rules will have minimal economic impact on dentists and dental hygienists who enter into affiliated practice relationships. There is no Board fee for entering into an affiliated practice relationship. There may be minimal expense to the dentist and dental hygienist in preparing the contractual agreement. The rule provides for continuing education requirements; however, those continuing education hours may also be credited toward existing license renewal continuing education requirements. To date, the Board has been notified of seven dental hygienists who have entered into affiliated practice agreements.

The rules will have minimal economic impact on dental hygienists who seek to use emerging technologies. There is no Board certification or fee for a dental hygienist to be eligible to use emerging technologies. As is the case with affiliated practice, the continuing education required by the rule may be applied toward license renewal continuing education requirements. The Board believes that a dental hygienist who becomes qualified to use some sort of emerging technology will command a higher wage. The possible increase in wage will offset any possible cost to the dental hygienist who seeks qualification in the use of an emerging technology.

The Board, dentists, dental hygienists, dental assistants, and the public benefit from rules that are clear, concise, and understandable. The rules benefit the public health and safety by clearly establishing the standards for dental and dental hygiene practice, including the development and use of affiliated practice relationships and the use of emerging technologies.

10. A description of the changes between the proposed rules, including supplemental notices, and final rules (if applicable):

There are no substantial changes in the final rule from the proposed rule. There are minor changes to style, format, grammar, and punctuation requested by G.R.R.C. staff.

11. A summary of the comments made regarding the rules and the agency response to them:

A public hearing was held on November 13, 2006. No one attended the hearing, and no written comments were received.

12. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

Not applicable

13. Any material incorporated by reference and its location in the rules:

None

14. Were these rules previously approved as emergency rules?

No

15. The full text of the rules follows:

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 11. STATE BOARD OF DENTAL EXAMINERS

ARTICLE 1. DEFINITIONS

Section
R4-11-101. Definitions

ARTICLE 5. DENTISTS

Section
R4-11-502. ~~Renumbered~~ Affiliated Practice

ARTICLE 6. DENTAL HYGIENISTS

Section
R4-11-601. Duties and Qualifications
R4-11-609. Affiliated Practice

ARTICLE 12. CONTINUING DENTAL EDUCATION AND RENEWAL REQUIREMENTS

Section
R4-11-1204. Dental Hygienists

ARTICLE 1. DEFINITIONS

R4-11-101. Definitions

The following definitions, and definitions in A.R.S. § 32-1201, apply to this Chapter:

Notices of Final Rulemaking

- “Analgesia” No change
- “Anxiolysis” No change
- “Application” No change
- “Business Entity” No change
- “Calculus” No change
- “Certificate holder” No change
- “Charitable Dental Clinic or Organization” No change
- “Clinical evaluation” No change
- “Closed subgingival curettage” No change
- “Combination inhalation and enteral conscious sedation” No change
- “Conscious sedation” No change
- “Controlled substance” No change
- “Credit hour” No change
- “Deep sedation” No change
- “Dental laboratory technician” or “dental technician” No change
- “Dentist of record” No change
- “Designee” No change
- “Direct supervision” No change
- “Disabled” No change
- “Direct supervision” No change
- “Dispense for profit” No change
- “Documentation of attendance” No change
- “Drug” No change
- “Emerging scientific technology” means any technology used in the treatment of oral disease that is not currently generally accepted or taught in a recognized dental or dental hygiene school and use of the technology poses material risks.
- “Enteral” No change
- “Epithelial attachment” No change
- “Ex-parte communication” No change
- “General anesthesia” No change
- “General supervision” No change
- “Homebound patient” No change
- “Informal interview” No change
- “Intravenous or intramuscular sedation” No change
- “Investigative interview” No change
- “Irreversible procedure” No change
- “Jurisdiction” No change
- “Licensee” No change
- “Local anesthesia” No change
- “Nitrous oxide analgesia” No change
- “Nonsurgical periodontal treatment” No change
- “Nurse anesthetist” No change
- “Official compendium” No change
- “Outpatient” No change
- “Oral conscious sedation” No change
- “Patient of record” No change
- “Periodontal examination and assessment” No change

Notices of Final Rulemaking

“Periodontal pocket” No change

“Plaque” No change

“Polish” means, for the purposes of A.R.S. § 32-1291(B) only, a procedure limited to the removal of plaque and extrinsic stain from exposed natural and restored tooth surfaces that utilizes an appropriate rotary instrument with rubber cup or brush and polishing agent. A licensee or dental assistant shall not represent that this procedure alone constitutes an oral prophylaxis.

“Prescription-only device” No change

“Prescription-only drug” No change

“President’s designee” No change

“Preventative and therapeutic agents” No change

“Prophylaxis” No change

“Public member” No change

“Recognized continuing dental education” means a program whose content directly relates to the art and science of oral health and treatment, provided by a recognized dental school as defined in A.R.S. § ~~32-1201(15)~~ 32-1201(17), recognized dental hygiene school as defined in A.R.S. § ~~32-1201(14)~~ 32-1201(16), or recognized denturist school as defined in A.R.S. § ~~32-1201(16)~~ 32-1201(18), or sponsored by a national or state dental, dental hygiene, or denturist association, dental, dental hygiene, or denturist study club, governmental agency, or commercial dental supplier.

“Representative” No change

“Restricted permit holder” No change

“Retired” No change

“Root planing” No change

“Scaling” No change

“Section 1301 permit” No change

“Section 1302 permit” No change

“Section 1303 permit” No change

“Semi-conscious sedation” No change

“Study club” No change

“Treatment records” No change

“Triage” No change

ARTICLE 5. DENTISTS

R4-11-502. Renumbered Affiliated Practice

- A.** A dentist in a private for profit setting shall not enter into more than 15 affiliated practice relationships under A.R.S. § 32-1289 at one time.
- B.** There is no limit to the number of affiliated practice relationships a dentist may enter into when working in a government, public health, or non-profit organization under Section 501(C)(3) of the Internal Revenue Code.
- C.** Each affiliated practice dentist shall be available telephonically or electronically during the business hours of the affiliated practice dental hygienist to provide an appropriate level of contact, communication, and consultation.
- D.** The affiliated practice agreement shall include a provision for a substitute dentist in addition to the requirements of A.R.S. § 32-1289(F), to cover an extenuating circumstance that renders the affiliated practice dentist unavailable for contact, communication, or consultation with the affiliated practice dental hygienist.

ARTICLE 6. DENTAL HYGIENISTS

R4-11-601. Duties and Qualifications

- A.** No change
- B.** No change
 - 1. No change
 - 2. No change
 - 3. No change
- C.** The Board shall ensure that a dental hygienist is qualified to administer local anesthesia and nitrous oxide analgesia as authorized by A.R.S. § 32-1281(F)(1) and (2), by requiring evidence that the hygienist has completed courses in techniques taught at a recognized dental hygiene school or recognized dental school, as defined in A.R.S. § ~~32-1201(14)~~ 32-1201(16) and ~~(15)(17)~~, which that consist of a minimum of 36 clock hours of instruction, and has passed examinations in

Notices of Final Rulemaking

theoretical knowledge and clinical competency in the following subject areas:

1. No change
2. No change
3. No change
4. No change
5. No change
6. No change
7. No change
 - a. No change
 - b. No change
 - c. No change
 - d. No change
 - e. No change
 - f. No change
 - g. No change
 - h. No change
 - i. No change
 - j. No change

D. No change

E. For purposes of qualification of a dental hygienist to place interrupted sutures as authorized by A.R.S. § 32-1281(F)(3), the Board recognizes courses in advanced periodontal therapy offered by a recognized dental hygiene school or a recognized dental school, as defined in A.R.S. § ~~32-1201(14)~~ 32-1201(16) and ~~(15) (17)~~, ~~which that~~ consist of a minimum of 200 clock hours of instruction and require a dental hygienist's successful completion of those examinations of a theoretical knowledge and clinical competency in the following subject areas:

1. No change
2. No change
3. No change
4. No change
5. No change
6. No change
7. No change
8. No change
9. No change
 - a. No change
 - b. Subgingival curettage, and
 - c. No change

F. No change

G. ~~Dental hygienists~~ A dental hygienist shall not perform an irreversible procedure.

H. To qualify to use emerging scientific technology as authorized by A.R.S. § 32-1281(D)(2), a dental hygienist shall successfully complete a course of study that meets the following criteria:

1. Is a course offered by a recognized dental school as defined in A.R.S. § 32-1201(17), a recognized dental hygiene school as defined in A.R.S. § 32-1201(16), or sponsored by a national or state dental or dental hygiene association or government agency;
2. Includes didactic instruction with a written examination;
3. Includes hands-on clinical instruction; and
4. Is technology that is scientifically based and supported by studies published in peer reviewed dental journals.

R4-11-609. Affiliated Practice

A. To perform dental hygiene services under an affiliated practice relationship pursuant to A.R.S. § 32-1289, a dental hygienist shall:

1. Provide evidence to the Board of successfully completing a total of 12 hours of recognized continuing dental education that consists of the following subject areas:
 - a. A minimum of four hours in medical emergencies; and
 - b. A minimum of eight hours in at least two of the following areas:
 - i. Pediatric or other special health care needs,
 - ii. Preventative dentistry, or
 - iii. Public health community-based dentistry, and
2. Hold a current certificate in basic cardiopulmonary resuscitation (CPR).

B. A dental hygienist shall complete the required continuing dental education before entering an affiliated practice relationship. The dental hygienist shall complete the continuing dental education in subsection (A) before renewing the dental

Notices of Final Rulemaking

hygienist's license. The dental hygienist may take the continuing dental education online but shall not exceed the allowable hours indicated in R4-11-1209(B)(1).

- C. To comply with A.R.S. § 32-1289(E) and (F) and this Section, a dental hygienist shall submit a completed affidavit on a form supplied by the Board office. Board staff shall review the affidavit to determine compliance with all requirements.
D. A dental hygienist who practices or applies to practice under an affiliated practice relationship shall ensure that all signatures in an affiliated practice agreement, amendment, notification, and affidavit are notarized.
E. Each affiliated practice dentist shall be available telephonically or electronically during the business hours of the affiliated practice dental hygienist to provide an appropriate level of contact, communication, and consultation.
F. The affiliated practice agreement shall include a provision for a substitute dentist, to cover an extenuating circumstance that renders the affiliated practice dentist unavailable for contact, communication, and consultation with the affiliated practice dental hygienist.

ARTICLE 12. CONTINUING DENTAL EDUCATION AND RENEWAL REQUIREMENTS

R4-11-1204. Dental Hygienists

- A. A dental hygienist shall complete 54 credit hours of recognized continuing dental education in each renewal period as follows:
1. At least 34 credit hours of recognized continuing dental education in one or more of the following areas: Dental and medical health, cardiopulmonary resuscitation, dental hygiene services, periodontal disease, care of implants, maintenance of cosmetic restorations and sealants, radiology safety and techniques, managing medical emergencies in addition to CPR, and new concepts in dental hygiene.
2. No change
3. No change
4. No change
B. A licensee who performs dental hygiene services under an affiliated practice relationship who is required to obtain continuing education under R4-11-609 may apply those credit hours to the requirements of this Section.

NOTICE OF FINAL RULEMAKING

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 30. BOARD OF TECHNICAL REGISTRATION

[R07-87]

PREAMBLE

- 1. Sections Affected: R4-30-101; Rulemaking Action: Amend
2. The statutory authority for the rulemaking, including both the authorizing statutes (general) and the implementing statutes (specific): Authorizing statute: A.R.S. § 32-106 (A)(1); Implementing statute: A.R.S. § 32-101
3. The effective date of the rule: May 5, 2007
4. A list of all previous notices appearing in the Register addressing the final rule: Notice of Rulemaking Docket Opening: 12 A.A.R. 4185, November 13, 2006; Notice of Proposed Rulemaking: 12 A.A.R. 4142, November 13, 2006
5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking: Name: Julie Ruff; Address: Arizona State Board of Technical Registration, 1110 W. Washington St., Ste. 240, Phoenix, AZ 85007; Telephone: (602) 364-4940; Fax: (602) 364-4931

Notices of Final Rulemaking

E-mail: julie.ruff@azbtr.gov

6. **An explanation of the rule, including the agency’s reasons for initiating the rulemaking:**
The addition of the definition “design team” will allow professional registrants to work on projects together while in the design process of these projects without signing and sealing documents that are unfinished product and still in the design phase of production.
7. **A reference to any study relevant to the rule that the agency reviewed and relied on or did not rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:**
None
8. **A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:**
Not applicable
9. **A summary of the economic, small business, and consumer impact:**
The addition of the definition “design team” benefits professional registrants by allowing the registrants to work on projects together while in the design process without signing and sealing documents that are unfinished product. Registrants may incur legal or regulatory fees should a working document be submitted to a regulatory or licensing agency as a professional document without being properly sealed. There are no significant impacts on other government agencies.
10. **A description of the changes between the proposed rule, including supplemental notices, and final rule (if applicable):**
The Board made minor clarifications throughout the rules for consistency. Minor format and grammatical changes were also made at the request of the Governor’s Regulatory Review Council staff.
11. **A summary of the comments made regarding the rule and the agency response to them:**
There were no comments on the rule.
12. **Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:**
None
13. **Any material incorporated by reference and its location in the text:**
None
14. **Was the rule previously made as an emergency rule?**
No
15. **The full text of the rule follows:**

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 30. BOARD OF TECHNICAL REGISTRATION

ARTICLE 1. GENERAL PROVISIONS

Section
R4-30-101. Definitions

ARTICLE 1. GENERAL PROVISIONS

R4-30-101. Definitions

The following definitions apply in this Chapter unless the context otherwise requires:

1. “Act” means the Technical Registration Act, A.R.S. Title 32, Chapter 1.
2. “Active engagement” means actually practicing or providing architectural, assaying, engineering, geological, landscape architectural, or land surveying services.
3. “Bona fide employee” means:
 - a. Any person employed by a town, city, county, state, or federal agency working under the direction or supervision of a registrant;
 - b. Any person employed by a business entity and working under the direct supervision of a registrant who is also employed by the same business entity; or
 - c. Any person working under the direct supervision of a registrant who:
 - i. Receives direct wages from the registrant;

Notices of Final Rulemaking

- ii. Receives contract compensation from the registrant; or
- iii. Receives direct wages from the project prime professional who has a contract with another registrant and whose work product is the responsibility of the latter registrant.
- 4. "Branch" means a specialty area within the category of engineering.
- 5. "Category" means the professions of architecture, assaying, geology, engineering, landscape architecture, and land surveying.
- 6. "De minimis violations" means violations of Board statutes or rules that do not present a threat to public welfare, health, or safety.
- 7. "Design team" means a group of individuals that includes one or more professional registrants collaborating with any other individuals on a specific project to develop professional documents.
- ~~7-8.~~ "Detached single family dwelling" as used in the Act means a single family dwelling unit such as a house, which is structurally and physically separate from all other family dwelling units. This does not mean any single family dwelling unit which is part of a multiple dwelling unit building such as a duplex, townhouse, apartment building, condominium, or cooperative. The term "detached single family dwelling" also includes all subsidiary buildings, structures, and improvements such as a garage, storage areas, swimming pool, and landscaping.
- ~~8-9.~~ "Direct supervision" means a registrant's critical examination and evaluation of a bona fide employee's work product, during and after the preparation, for purposes of compliance with applicable laws, codes, ordinances, and regulations pertaining to professional practice.
- ~~9-10.~~ "Experience" is classified as follows:
 - a. "Subprofessional experience" means task work done under direct supervision and not falling within the definition of professional experience, including but not limited to time spent as a rodman, chainman, recorder, instrument technician, survey aide, technician, clerk of the works, or similar work.
 - b. "Professional experience" means work calling for substantial technical knowledge, skill, and responsibility as well as a lesser degree of supervision.
 - c. "Responsible charge experience" means work in the field or in the office, where the applicant had responsibility for the direction of the work and its successful accomplishment and where the applicant had to make professional decisions without relying on advice or instructions from or first referring the decisions for approval to a superior.
 - d. "Design experience" means professional experience, including work defined under "responsible charge experience," where the applicant must fulfill the requirements of local circumstances and conditions and yet not violate any of the requirements of the profession and ensure that the executed plan meets the purpose for which it was designed.
- ~~10-11.~~ "Federal agency" means the United States or any agency or instrumentality, corporate or otherwise, of the United States.
- ~~11-12.~~ "Good moral character and repute" means that the registration or certification applicant:
 - a. Has not been convicted of a class 1 felony as defined in under A.R.S. § 13-601(A).
 - b. Has not been convicted of a felony or misdemeanor if the offense has a reasonable relationship to the functions of the employment or category for which the registration, certification, or designation is sought;
 - c. Has not, within five years of application for registration or certification, committed any act involving dishonesty, fraud, misrepresentation, breach of fiduciary duty, gross negligence, or incompetence reasonably related to the candidate's proposed area of practice;
 - d. Is not currently incarcerated in a penal institution;
 - e. Has not engaged in fraud or misrepresentation in connection with the application for registration, certification, or related examination;
 - f. Has not had a registration or certification revoked or suspended for cause by this state or by any other jurisdiction, or surrendered a professional license in lieu of disciplinary action;
 - g. Has not practiced without the required technical registration or certification in this state or in another jurisdiction within the two years immediately preceding the filing of the application for registration or certification; and
 - h. Has not, within five years of application for registration or certification, committed an act that would constitute unprofessional conduct, as set forth in R4-30-301 or R4-30-301.01.
- ~~12-13.~~ "Gross negligence" means a substantial deviation in professional practice from the standard of professional care exercised by members of the registrant's profession, or a substantial deviation from any technical standards issued by a nationally recognized professional organization comprised of members of the registrant's profession, or a substantial deviation from requirements contained in state, municipal, and county laws, ordinances, and regulations pertaining to the registrant's professional practice.
- ~~13-14.~~ "Incompetence" means to lack the professional qualifications, experience, or education to undertake a professional engagement or assignment.
- ~~14-15.~~ "Insufficient evidence to support disciplinary action" means:
 - a. The Board determines there was no evidence to warrant disciplinary action, but believes that continuation of the actions leading to the investigation may result in future Board action against the registrant; or

Notices of Final Rulemaking

- b. The Board determines that there were de minimis violations of Board statutes or rules, but no disciplinary action should be taken against the certification or registration and that a letter of concern would be as effective a resolution as a letter of reprimand in deterring future violations of a like nature.
- ~~15-16.~~ "Other misconduct" means the registrant:
 - a. Has been convicted of a class 1 felony;
 - b. Has been convicted of a felony or misdemeanor, if the offense has a reasonable relationship to the functions of the registration;
 - c. Is presently incarcerated in a penal institution;
 - d. Has had a professional license or registration suspended or revoked for cause by this state or by any other jurisdiction or has surrendered a professional license in lieu of disciplinary action;
 - e. Has knowingly acted in violation or knowingly failed to act in compliance with any provisions of the Act, or rules of the Board or any state, municipal, or county law, code, ordinance, or regulation pertaining to the practice of the registrant's profession; or
 - f. Has refused to respond fully to a Board inquiry relating to an applicant's qualifying experience, or provided the Board with false information relating to an applicant's qualifying experience.
- ~~16-17.~~ "Practicing" means offering or performing professional services regulated by the Act within the state of Arizona.
- ~~17-18.~~ "Prepared" means to exercise direct supervision over the preparation of professional documents.
- ~~18-19.~~ "Professional documents" mean the professional work product of a registrant ~~requiring that requires~~ professional judgement ~~judgment~~, design, analysis, or conclusions, including original plans, drawings, maps, plats, reports, written opinions, specifications, and calculations.
- ~~19-20.~~ "Project Prime Professional" means the registrant ~~is~~ responsible for the coordination, continuity, and compatibility of each collaborating registrant's work (when retained by the project prime professional).
- ~~20-21.~~ "Public ~~Works~~ works" project means a work or undertaking ~~which that~~ is financed, in whole or in part, by a federal agency or by a state public body, as defined in this Article.
- ~~21-22.~~ "Registrant" means a person or firm who has been granted registration or certification to practice any profession regulated pursuant to the Act.
- ~~22-23.~~ "Retired from active practice" means that the registrant no longer performs professional services.
- ~~23-24.~~ "State public body" means the state or a county, city, town, municipal corporation, authority, or any other subdivision, agency, or instrumentality of such an entity, corporate or otherwise.
- ~~24-25.~~ "Structure" as used in the Act means any constructed or designed improvement or improvements to real property including all onsite improvements, fixed equipment, and landscaping, pursuant to an engagement or project.

NOTICE OF FINAL RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 7. DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIAL ACTION

[R07-83]

PREAMBLE

1. Sections Affected

- R18-7-201
- R18-7-202
- R18-7-203
- R18-7-204
- R18-7-205
- R18-7-206
- R18-7-207
- R18-7-207
- R18-7-208
- R18-7-208
- R18-7-209
- R18-7-209
- R18-7-210
- R18-7-210
- Appendix A
- Appendix A

Rulemaking Action

- Amend
- Amend
- Amend
- Amend
- Amend
- Amend
- Repeal
- New Section
- Re-number
- New Section
- Re-number
- Amend
- Re-number
- Amend
- Re-number
- New Appendix

Notices of Final Rulemaking

Appendix B	Repeal
Appendix B	Re-number
Appendix B	Amend
Appendix C	Repeal

2. The statutory authority for the rulemaking, including both the authorizing statutes (general) and the implementing statutes (specific):

Authorizing statutes: A.R.S. §§ 49-104(B)(4), 49-104(B)(16), 49-152, and Laws 1996, Ch. 151, § 9
Implementing statutes: A.R.S. §§ 49-151, 49-152

3. The effective date of the rules:

May 5, 2007

4. A list of all previous notices appearing in the Register addressing the final rules:

Notice of Rulemaking Docket Opening: 12 A.A.R. 3196, September 1, 2006

Notice of Proposed Rulemaking: 12 A.A.R. 3124, September 1, 2006

5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: Philip McNeely
Tank Programs Division

Address: Arizona Department of Environmental Quality
1110 W. Washington St.
Phoenix, AZ 85007

Telephone: (602) 771-7645 or (800) 234-5677, enter 771-7645 (Arizona only)
E-mail: McNeely.Philip@azdeq.gov

Name: Amanda Stone
Waste Programs Division

Address: Arizona Department of Environmental Quality
1110 W. Washington St.
Phoenix, AZ 85007

Telephone: (602) 771-4567; or (800) 234-5677, enter 771-4567 (Arizona only)
E-mail: Stone.Amanda@azdeq.gov
Fax: (602) 771-2302
TTD: (602) 771-4829

6. An explanation of the rules, including the agency's reasons for initiating the rules:

Summary of the Rule

ADEQ has made changes to update and revise A.A.C. Title 18, Chapter 7, Article 2, last amended on December 4, 1997, to be consistent with current scientific data and statute. Changes in the rules: 1) revise and update the predetermined Soil Remediation Levels (SRL); 2) replace the Voluntary Environmental Mitigation Use Restriction (VEMUR) requirement with the Declaration of Environmental Use Restriction (DEUR) requirements consistent with A.R.S. § 49-152; 3) expand the determination of compliance with SRLs to include the use of soil gas analyses; 4) revise language regarding the letter of completion to add alternative closure documents consistent with current statute; and 5) require the use of 1×10^{-6} excess lifetime cancer risk level for remediation at sites if the current or currently intended future use is a school or child care facility where children are reasonably expected to be in frequent and repeated contact with the soil.

Overview of the Rule

Introduction. Article 2, Chapter 7 provides the basis for conducting remediation of soil in accordance with A.R.S. §§ 49-151 and 152, A.R.S. § 33-434.01, and other applicable environmental statutes. The last amendment of the rules established predetermined SRLs to protect human health and the environment which were consistent with the methodology used by U.S. EPA and Region 9 EPA guidance for calculation of risk-based screening levels, but deviated from the soil saturation calculation method by allowing an additional one percent saturation of the organic chemical in volumetric soil pore space (see Preamble of December 4, 1997 amendment of Article 2, Chapter 7). This final rulemaking retains the practice of utilizing the most current U.S. EPA Region 9 risk assessment practices and methodologies [see "User's Guide and Background Technical Document for U.S. EPA Region 9's Preliminary Remediation Goals (PRG) Table", October 2004, available from <http://www.epa.gov/region09/waste/sfund/prg/index.html>], and updates toxicity data as determined by U.S. EPA and other sources (see OSWER Directive 9285.7-53, December 5, 2004). This Section describes how the SRLs have changed as a result of current EPA methodology and data. Any

changes from U.S. EPA Region 9 methodology and/or the current soil rule amendment are noted in this Section, with rationale provided. Modifications to the final rules are also described. Many of these are the result of comments received from the numerous stakeholder meetings held in 2004 and 2005. Stakeholders included members of the business community, the interested public, and regulators, many of whom were involved in the original 1997 rulemaking, and included discussion of administrative and technical issues.

Overall, the predetermined SRLs have been modified with regard to two basic aspects, which are consistent with Region 9 and U.S. EPA. First, during the period since the last rule amendment, toxicity data have been determined to be inappropriate for use, have been newly established, or have been revised based on additional studies conducted. Secondly, the equations for calculating the SRL have been revised to include: greater skin surface contact area with contaminated soils for resident adults and children; less skin surface contact area with contaminated soils for workers; elimination of skin absorption for inorganic chemicals and volatile organic chemicals (semi-volatile organic chemicals remain unchanged); and decreased adherence of soil to the skin of resident adults. ADEQ has elected to deviate from EPA only in the soil ingestion rate for resident adults. EPA based their soil ingestion rate of 100 milligrams per kilogram (mg/kg) on an adult outdoor exposure scenario. ADEQ chose the ingestion rate of 50 mg/kg because this rate is based on an adult indoor exposure scenario, which is more accurate for adults in residential settings.

The predetermined SRLs have been calculated using updated toxicity information as recommended by EPA. In December 2004, EPA established a hierarchy of toxicity data to be used from various available sources. The following hierarchy of sources is recommended in evaluating chemical toxicity for Superfund sites: 1) Integrated Risk Information System (IRIS) and cited references; 2) Provisional Peer Reviewed Toxicity Values (PPRTV) and cited references developed for the EPA OSWER Office of Superfund Remediation and Technology Innovation (OSRTI) programs; and 3) Other toxicity values which include California Environmental Protection Agency (Cal EPA), the Agency for Toxic Substances and Disease Registry (ATSDR) published Minimum Risk Levels (MRLs) for noncancer effects only, the EPA Superfund Health Effects Assessment Summary Tables (HEAST) database and cited references and others as appropriate. All of the studies cited in these toxicity databases have been subjected to scientific peer-review prior to publication. These toxicity databases undergo periodic updates that result in data that is withdrawn or modified. Data withdrawn from a toxicity source are not adequate for use in calculations of SRLs.

The predetermined SRLs remain consistent with existing SRL methodology for determining saturation ceiling limits (100 percent) for chemicals that are not volatile organics, though this deviates from Region 9 EPA application of a saturation ceiling of 10 percent for these chemicals. ADEQ has retained the 100% saturation ceiling for these chemicals when the risk-based standard exceeds a concentration that represents "pure product." For volatile organic chemicals, however, the SRLs have been revised to be consistent with Region 9 and U.S. EPA methodology for determination of saturation. This is revised from the previous SRL determination for saturation which provided for an additional one percent saturation of the chemical in soil.

The definitions for soil and soil remediation level have been revised (R18-7-201), and the provision of R18-7-203(C) has been added to allow the use of soil vapor in calculating the concentration of volatile chemicals in soil. These revisions will keep the rules consistent with the advances in technology and modeling which EPA utilizes in determining site-specific and risk-based cleanup levels. The final rules allow the use of soil properties and the vapor state of chemicals in soil for resolving difficult and complex contamination issues, such as subsurface plume distribution and verification of remediation goals.

The predetermined SRLs have been modified to include additional consideration for cleanup of contaminants that are carcinogenic at schools and child care facilities where children are reasonably expected to be in frequent and repeated contact with the contaminated soil. Previously, both residential and non-residential SRLs were calculated to achieve the same target risk for any given carcinogenic chemical. This target risk was set at 1 in 1,000,000 (or 1×10^{-6}) excess lifetime cancer risk level when sufficient evidence supports classification of the chemical as a known human carcinogen (formerly Classification A). All other carcinogens with less adequate weight of evidence (formerly probable B1 or B2, or possible C human carcinogens) were assigned a target risk of 1 in 100,000 (or 1×10^{-5}). This final rulemaking does not change this aspect of target risk, except for those sites where property use is currently or is currently intended to be a child care facility or school. For these sites, the applicable residential SRL is set at the 1×10^{-6} excess lifetime cancer risk level [see R18-7-205(D) and (E)]. Appendix A now shows residential SRLs at both excess lifetime cancer risk levels, and the known human carcinogens in **bold**. For instance, a residential property may cleanup carcinogens present in soil to the SRL noted in the 1×10^{-5} risk column, except if the carcinogen appears in bold in Appendix A at which time the SRL in the 1×10^{-6} risk column must be used for this particular chemical. If conditions at this residential site are such that a child care facility or school is intended for development, regardless of the respective concentrations, all carcinogens must be cleaned up to the SRL listed in the 1×10^{-6} risk column. This change reflects the nationwide initiative undertaken by EPA and the National Academy of Science for protection of children's health. Many of the exposures to chemicals which have been evaluated to be protective of human health have not taken into account that childhood behavior and physiology is vastly different from adults, resulting in higher exposures and heightened toxicological susceptibility to their developing systems. The magnitude of these combined impacts is not well understood. Therefore, the objective of this final rulemaking is to establish SRLs that serve as adequate safeguards for children due to exposures from a release of chemicals to the environment of schools and child care facilities.

The agency chose the use of 1×10^{-6} risk level for all carcinogenic chemicals for schools and child care facilities. It should be clarified that the weight of evidence for carcinogenic classification is not related to the robustness of studies available for quantifying toxicity. In fact, it is more appropriate to link the degree of confidence in the quantitative toxicity value to the level of target risk. However, this would be nearly impossible to do for nearly 600 chemicals as it would require a chemical-by-chemical review of the toxicity database. As it stands, when a chemical has adequate human and animal data to support a determination that cancer is known to result from chronic exposures, it is also reasonable to minimize the incidence of this known cancer result by selecting the lower, or more protective, of the two target risks for the SRL. This rulemaking did not change the target health hazard quotient for non-carcinogenic exposure estimations in the previous SRLs and it remains at one.

Because U.S. EPA no longer continues the alpha-numeric convention of chemical classification for evidence of carcinogenicity, Appendix A reflects only the status of "carcinogen" and "non-carcinogen" for each chemical. Some chemicals can have both carcinogenic and non-carcinogenic effects. It is the weight of toxicological evidence which determines this. As such, the definitions for carcinogenic and non-carcinogenic chemicals have been modified in lieu of the "cancer group" definition in order to be consistent with U.S. and Region 9 EPA current practices (see R18-7-201). When a chemical has both carcinogenic and non-carcinogenic characteristics, the lower, or more protective, of the SRLs listed under the non-carcinogenic column and under the applicable carcinogenic risk column is the required cleanup level for that chemical [see R18-7-205(F)].

This final rulemaking still authorizes the use and determination of site-specific SRLs. These remain as naturally occurring background levels, and levels determined using a site-specific risk assessment methodology that meets the requirements of the Department and has general consensus within the scientific community. This final rulemaking does not change the options for selection of residential and non-residential remediation levels, nor increase the reliance upon site-specific risk assessments to determine alternative remediation levels. For instance, industrial properties are not required to remediate to levels that would be protective of children living on the site. The party conducting the remediation can decide to remediate to the more protective residential standards or the less protective non-residential standards, depending on the property's intended use. However, the property must be remediated to residential standards if the land use at the time remediation is complete is residential.

The final rules continue to require the use of institutional or engineering controls when site concentrations exceed residential SRLs but meet non-residential pre-determined SRLs. Also, the rules allow the use of an institutional or engineering control to achieve an alternative site-specific SRL. However, due to A.R.S. §§ 49-152 and 49-158 enacted in 2000, the VEMUR is no longer a valid legal mechanism to administer these controls. This legislation clarified available options for property owners who clean up contaminated property for which the remediation is subject to Department approval. Institutional and engineering controls now require a DEUR to be implemented and maintained for sites meeting these criteria, thus replacing the VEMUR (see R18-7-202).

Regardless of the choice to remediate to the pre-determined or site-specific standards, the conditions required for showing compliance with the selected standard have not changed. As before, any contaminants in the soil remaining after remediation cannot: 1) contaminate or threaten to contaminate groundwater or surface water in excess of water quality standards; 2) exhibit a hazardous waste characteristic of ignitability, corrosivity or reactivity; or 3) cause or threaten to cause an adverse impact to ecological receptors.

Applicability and Transition to New Standards

Neither the previous rules nor the current one requires soil remediation; they only provide standards which must be met in order to successfully complete remediation under Title 49. The requirement to perform soil remediation is found in the specific Title 49 statutes (e.g., the Water Quality Assurance Revolving Fund (WQARF) Program; the Underground Storage Tank (UST) Program; the Hazardous Waste Management Program; the Solid Waste Management Program; the Special Waste Management Program; the Aquifer Protection Permit Program.) Additionally, the remediation standards apply to parties who voluntarily conduct soil remediation for the Greenfields Pilot Program and the Voluntary Remediation Program. The applicable regulatory program, rather than the soil remediation rules, determines which contaminants require remediation. Once the contaminant has been identified, the soil remediation rules establish the remediation level for the contaminant.

There are two categories of persons who undertake remediation activities. The first category includes persons who have a legal duty to remediate under the Department's statutory authority (Title 49), although, under certain circumstances, the remedial activities may be conducted under the Department's voluntary program.

The second category includes those who voluntarily conduct remediation. The Department recognizes that it has limited regulatory authority over a person who is either remediating a site which has been contaminated by means not regulated under Title 49, or a person who is not legally responsible for remediating the contamination under Title 49. A person in this category is a "volunteer." If these persons perform soil remediation activities under the Department's voluntary program, the requirements of this Article must be met.

The Department is aware of many instances where a person who is not a responsible party decides to conduct remediation outside the Department's jurisdiction. If a person is outside the Department's regulatory jurisdiction and no closure document from the Department is requested, remediation may be conducted without the Department's involvement or knowledge. In such a case, the soil remediation rules can be used as guidance.

This final rulemaking ends the applicability of the SRLs published under the December 4, 1997 amendment (the "1997 SRLs") after three years, and immediately ends applicability of the HBGLs (Health-based Guidance Levels) promulgated under the March 1996 Interim Emergency Soil Rule. Sites that are characterized before May 5, 2007 will have three years to meet the current 1997 SRLs, and the closure requirements of the applicable program (see R18-7-202). Appendix A of previous rule contained the previous SRLs and is reproduced in the current rule, with minor corrections, as "Appendix B, 1997 Soil Remediation Levels (SRLs)". This new Appendix B has only been revised with some corrected CAS (Chemical Abstract System) numbers and chemical names, and in one case, a corrected cancer group. Also, the updated SRLs in Appendix A apply to sites conducting remediation or risk assessment that are not completed by May 5, 2010, (three years from the effective date of this rulemaking.) The soil cleanup levels do not extend to activities conducted pursuant to orders or other binding agreements that identify a cleanup standard entered into before May 5, 2007. These orders and agreements are listed in R18-7-202, and have been expanded from the previous list.

Specific Detailed Discussion of Rule Changes

Chemicals Renamed. For ease of identifying a chemical with related compounds and of recognition with the more commonly used names for chemicals, the following contaminants listed in the previous rule were retained in the SRL list under other names as noted: ethyl chloride is listed under the more commonly recognized name, chloroethane; hydrogen cyanide is listed under "cyanide, hydrogen" for ease of comparison to "cyanide, free"; chloral (CAS # 302-17-0) was listed in the previous SRL list but absent from the PRG list. Because the IRIS database specifically contains non-carcinogenic oral toxicity information for this compound under chloral hydrate, and there is suggestive evidence of human carcinogenicity when oral exposures occur, this chemical is retained in the SRLs in Appendix A as chloral hydrate, rather than the anhydrous form previously listed; the 1,1- and 1,2- isomers of dimethyl hydrazine are listed under "hydrazine, dimethyl" due to indiscernible segregate toxicities, and methyl hydrazine is listed as "hydrazine, monomethyl" for comparative purposes to the dimethyl form.

Chemicals Revised Due to Consolidation of Similar Salts or Isomers. In the environment, chemicals may be present as one or more very similar parent compounds with slight variations. An example of this is the variety of chemical forms for cyanides. The previous SRLs included nine elemental forms of cyanide that are consolidated by this rule to one free cyanide SRL. This change is more practical as it is consistent with the reportable results provided by the laboratory method. The following SRLs are affected as follows: antimony and compounds replaces the pentoxide, potassium tartrate, tetroxide, and trioxide forms of antimony; free cyanide replaces the barium, calcium, chlorine, copper, potassium, potassium silver, silver, sodium, and zinc elemental forms of cyanide; thallium and compounds replace the oxide, acetate, carbonate, chloride, nitrate, selenite, and sulfate forms of thallium; and vanadium and compounds replaces vanadium pentoxide and sulfate.

PCBs. In order to be consistent with the latest toxicity studies, the final SRLs include PCBs under two categorical groups, for low-risk and for high-risk unspicated mixtures. Previously, PCBs were lumped under a single SRL, and assigned a single toxicity, for all varieties of PCB mixtures, typically referred to as Aroclors. An example of an unspicated, low-risk mixture is Aroclor 1016. Low-risk mixtures are those PCB formulations with low percentage chlorine content, and little to no polychlorinated dibenzofurans. High-risk mixtures are those PCB formulations with high percentage chlorine content, and the presence of polychlorinated dibenzofurans. For releases of multiple Aroclors, or PCBs of varying age subjected to weathering, speciation is an option for evaluating an alternative SRL.

Chemicals Not Listed Due to Impacts Limited to Air and/or Groundwater. ADEQ determined that ammonia, hydrogen chloride, nitrate, and nitrite, which had SRLs in the previous rule, did not warrant listing in the soil rule or did not warrant the determination of a single numeric soil cleanup value because they do not pose a significant health risk in soil. For example ammonia was listed in the previous SRLs, but only listed in Region 9 PRGs for ambient air concentrations. Ammonia is highly transient in soil, as it rapidly volatilizes into air in surficial soils, and quickly oxidizes to nitrite and nitrate. Accordingly, ammonia is not listed as a chemical in this final rule; however, nitrite and nitrate are regulated under new Section R18-7-207 for ground water protection. Nitrite and nitrate in water are extremely toxic to newborns and children, and have significant impacts to aquatic organisms, but are a negligible health risk in soil.

Chemicals Deleted Due to Updated Toxicity Information. Since the last rule, toxicity data has been evaluated further or new information made available for some chemicals which do not provide an adequate basis for the quantitation of toxicity and/or the determination of a definitive adverse impact. For these chemicals, the toxicity factors formerly provided have been withdrawn from sources which are currently relied upon for toxicity determination, per U.S. EPA guidance. As a result, retaining these chemicals in the SRLs is not supportable. The following SRLs are no longer listed in Appendix A: acetophenone, acifluorfen, 1,2-dichloroethylene mixture, methyl chlorocarbonate, cacodylic acid, and nitrpyrin. Only cacodylic acid, also known as dimethyl arsenate, has older toxicity data from NCEA still remaining. However, until the toxicity of organic forms of arsenic has been studied more fully, ADEQ will rely upon the arsenic SRL to address protection of human health.

Chemicals Added Due to New Toxicity Information. Since the last rule, additional toxicity studies have been conducted which warranted their use in the development of a toxicity factor, which is integral to the calculation of SRLs. The following new SRLs have been added to the list in Appendix A: aminodinitrotoluene, bromate, bromobenzene, butyl benzene (n-, sec-, and tert-), cyclohexane, 4,4'-dichlorobenzophenone, 1,3-dichloropropane, dicyclopentadiene, diisononyl phthalate, dimethylphenethylamine, N,N-diphenyl-1,4-benzenediamine, diphenyl sulfone, dysprosium, 1,6-hexamethylene diisocyanate, 2-mercaptobenzothiazole, 4,4'-methylenediphenyl diisocyanate, methyl mercaptan,

methyl phosphonic acid, 3- and 4- nitroaniline, nitroglycerin, 2-nitropropane, o-nitrotoluene, perchlorate, phenothiazine, o-phenylenediamine, p-phthalic acid, polychlorinated terphenyls, n-propyl benzene, 1,1'-sulfonylbis-(4-chlorobenzene), tetrahydrofuran, thiocyanate, titanium, tributyl phosphate, trimellitic anhydride, 1,2,4- and 1,3,5-trimethyl benzene, triphenylphosphine oxide, tris(2-chloroethyl) phosphate, tris(2-ethylhexyl) phosphate, and uranium.

Petroleum hydrocarbons. This final rulemaking has eliminated the SRL listing for petroleum hydrocarbon mixtures, range C₁₀ – C₃₂. In the previous rule, diesel No. 2 was used as the standard of toxicity for which all types of petroleum products are applied. This did not accurately represent the toxicity of all petroleum constituents. Therefore, the final rules do not set a single numeric SRL value for all constituents encountered at petroleum sites. Rather, the final rules provide for the cleanup of petroleum hydrocarbons by requiring cleanup of the individual petroleum constituents detected in soil which have a SRL. For example, depending on the type of product released, this may include PAHs, trimethyl benzenes, and MTBE. However, not all of the hundreds of chemical constituents have adequate toxicity data to establish an SRL. ADEQ concluded that an adequate number of these petroleum compounds representing the significant portion of attributable toxicity do have SRLs, and this approach is adequately protective of human health and the environment.

Lead. In the final rules, the residential SRL for lead remains unchanged at 400 mg/kg. However, the non-residential SRL has been lowered from 2,000 mg/kg to 800 mg/kg. Consistent with the methodology of the previous rules and U.S. EPA, the final SRL for lead was determined differently than other SRLs using U.S. EPA biokinetic modeling, which estimates the blood lead level resulting from repeated exposures to lead. The Integrated Exposure Uptake Biokinetic (IEUBK) model for childhood exposures is still utilized to determine the appropriate residential SRL, which remains as 400 mg/kg. However, U.S. EPA has issued a version of the biokinetic modeling which more accurately assesses the blood level in adults exposed in the working environment. Using the most recent national census and health survey results of blood levels in adult women in the Adult Lead Model (ALM), the level in soil for non-residential uses of property has been revised from 2,000 mg/kg to 800 mg/kg. This change is based on protecting women of child-bearing age in the work environment, since fetuses and newborns are highly sensitive to the effects of lead. This is particularly important because more evidence indicates that early life exposures, even if discontinued, result in later life manifestations of health impacts such as neurological problems. If a site-specific remediation level is desired, the U.S. EPA biokinetic model may be used in conjunction with the data from the national health survey for both racial/ethnic groups and the southwest regional quadrant of the nation, or the ALM adjusted for DEUR-restricted exposure groups which do not include pregnant working adults. Alternatively, other biokinetic models may be used for shorter duration or highly variable exposures with supporting high quality site-specific data.

Chromium. Based on the lack of sufficient supporting evidence for total chromium to persist in the environment in the assumed 1:6 ratio of the hexavalent and trivalent forms (though it has been demonstrated to occur as such in the fumes and mists generated in the industrial chromium processing workplace), the previous SRL for total chromium was deleted. The agency believes that chromium toxicity should be based on the known and published toxicity factors determined for each form, rather than an assumed ratio for total chromium. Therefore, ADEQ retained the more technically supportable and protective SRLs for trivalent and hexavalent chromium.

Iron. Though Region 9 EPA has listed iron in the PRG list and it is ADEQ's goal to be consistent with Region 9 EPA practices, the agency believes that development of an SRL for iron is not warranted at this time. Available studies and information indicates limited toxicity, such that risk-based levels are approximately equivalent to levels of saturation in soil and/or naturally occurring background.

Mercury. ADEQ has limited the SRLs for mercury to those for methyl mercury and "mercury and compounds". The 1997 SRLs list mercury under mercuric chloride, elemental mercury, and methyl mercury. However, because elemental mercury exists as a liquid/vapor state, Region 9 EPA does not include it for soil. To simplify, all inorganic mercury compounds, regardless of solubility in soil/water environments, are listed under a new SRL for "mercury and compounds". This does not deviate from the manner in which SRLs for other metals are treated. If conditions at a site indicate that the more insoluble forms of inorganic mercury are present, a simple chemical speciation in conjunction with published bioavailability studies for the species present is adequate for demonstrating the protection of human health.

Manganese. Based on ADEQ's evaluation of the available manganese toxicity information, ADEQ has elected to use the toxicity factor provided by the EPA IRIS database adjusted for intake from other sources such as soil. Region 9 EPA uses an approach that does adjust for intake from other sources, but the adjustment is applied by 2 methodologies. ADEQ applies only 1 adjustment method in accordance with EPA's IRIS recommendations.

Perchlorate. ADEQ has selected the most recently available peer reviewed toxicity factor for use in calculating the SRL. At the time of publication of the October 2004 Region 9 PRGs, toxicity information was available only from EPA's National Center for Exposure Assessment (NCEA) based on a health risk assessment conducted in 2002. Because of the widespread presence of perchlorate, previously unknown due to limits in laboratory method technology, and because of potential developmental impacts to the human fetus and newborns by inhibiting thyroid function, EPA requested the National Academy of Science (NAS) to develop a separate risk assessment for perchlorate. NAS issued this risk assessment in January 2002, and the toxicity factor resulting from the NAS evaluation was adopted by EPA and incorporated into the IRIS database of toxicity. The SRL for perchlorate also applies to perchlorate salts, such as ammonium, lithium, potassium, and sodium perchlorates.

Notices of Final Rulemaking

Trichloroethylene (TCE). The agency has elected to be moderate by choosing neither the most or least stringent of the published TCE slope factors for use in calculating the SRL. A selection is required because EPA has not finalized the TCE toxicity factors. The toxicity factors available include the withdrawn “old” IRIS EPA value (1989), the lower range “provisional” EPA value (2001), the upper range “provisional” EPA value (2001), and the California EPA value (2002). ADEQ has selected California EPA’s toxicity value which is closest to that of the old IRIS value, but not as stringent as either EPA provisional value. The agency has made this determination based on the available science, as well as the necessity of proceeding with a determination as the outcome of the current review process does not guarantee a final EPA value without further studies.

Definitions (R18-7-201). The amendment to this Section removes the definitions for “Cancer Group,” “Greenfields Pilot Program,” “Voluntary Environmental Mitigation Use Restriction,” “Voluntary Remediation Program,” and “WQARF Voluntary Program.” The amendment modifies the definitions for “Aquifer Protection Program,” “carcinogen,” “contaminant,” “engineering control,” “hazard quotient,” “nuisance,” “repository,” “site-specific human health risk assessment,” “soil,” “soil remediation level,” “solid waste management program,” “special waste management program,” and “water quality assurance revolving fund.” In addition, the amendment adds new definitions for “child care facility,” “Declaration of Environmental Use Restriction,” “non-carcinogen,” and “school.” Many of the deletions, modifications and additions in this final rule are clarifications and corrections. Others are discussed earlier in this preamble.

Closure documents (R18-7-209). The amendments to this Section clarify that in addition to a “Letter of Completion,” alternative closure documents provided for by statute or rule can be used to document that the soil standards have been achieved. No further action and LUST closure letters are examples of program-specific closure documents authorized by statute.

Notice of remediation and repository (R18-7-210). The amendment to this Section clarifies that a notice of remediation need not be submitted before a remediation that addresses a substantial and immediate endangerment to public health or the environment.

7. A reference to any study relevant to the rules that the agency reviewed and either relied on, or did not rely on in its evaluation of or justification for the rules, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

- a. OSWER Directive 9285.7-53; “Human Health Toxicity Values in Superfund Risk Assessments”; USEPA; December 5, 2003; available from ADEQ and at <http://www.epa.gov/swerrims/riskassessment/pdf/hhmemo.pdf>
- b. “Region 9 Preliminary Remediation Goals (PRG) Table”; USEPA; December 28, 2004; available from ADEQ and at <http://www.epa.gov/region09/waste/sfund/prg/index.html>
- c. “PRG User’s Guide and Background Technical Document”; USEPA; October 27, 2004; available from ADEQ and at <http://www.epa.gov/region09/waste/sfund/prg/index.html>
- d. U.S. EPA. 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final. EPA/540/R-99/005. Office of Solid Waste and Emergency Response, Washington, D.C.; available from ADEQ and EPA.
- e. U.S. EPA. 2001. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, Interim Guidance. Office of Solid Waste and Emergency Response, Washington, D.C.; available from ADEQ and EPA.
- f. U.S. EPA. 1996. Soil Screening Guidance: Technical Background Document. EPA/540/R-95/128. Office of Solid Waste and Emergency Response, Washington, D.C.; available from ADEQ and EPA.
- g. U.S. EPA. 2002. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics From Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III). Office of Solid Waste and Emergency Response, Washington, D.C.; available from ADEQ and EPA.
- h. U.S. EPA. 2003. Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposure to Lead in Soil. EPA/540/R-03/001. Office of Solid Waste and Emergency Response, Washington, D.C.; available from ADEQ and EPA.
- i. U.S. EPA. 2005. Guidelines for Carcinogen Risk Assessment. EPA/630/P-03/001F, available from ADEQ and at <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=116283>
- j. California EPA, February 2004. Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites, Final Report; available from ADEQ and at http://www.oehha.ca.gov/public_info/public/kids/schools2604.html
- k. U.S. EPA, September 2002. Child-Specific Exposure Factors Handbook. EPA-600-P-00-002B; available from ADEQ and at http://oaspub.epa.gov/eims/eimscomm.getfile?p_download_id=36528.
- l. U.S. EPA, February 2003. America’s Children and the Environment: Measures of Contaminants, Body Burdens, and Illnesses. EPA 240-R-03-001. Available from ADEQ and at http://oaspub.epa.gov/eims/eimscomm.getfile?p_download_id=459042

- m. U.S. EPA, March 2005. Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens. EPA/630/R-03/003F. Available from ADEQ and at <http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=116283>
- n. Adgate, John L. et al. (2004) "Outdoor, Indoor, and Personal Exposure to VOCs in Children." Environ Health Perspect.; 112(14) 1386-1392. National Institutes of Health, available from ADEQ and at <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1247565>
- o. U.S. EPA, September 2006. A Framework for Assessing Health Risks of Environmental Exposures to Children. EPA/600/R-05/093F; available from ADEQ and at <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=159925>
- p. Earth Technology, 1991. Evaluation of Background Metals Concentrations in Arizona Soils; available from ADEQ.
- q. U.S. EPA, December 2003. Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin [TCDF] and Related Compounds. EPA/600/P-00/001Cb, available from ADEQ and at <http://www.epa.gov/ncea/pdfs/dioxin/nas-review/>
- r. National Academy of Sciences, July 2006; Health Risks from Dioxin and Related Compounds: Evaluation of the EPA Reassessment; available from ADEQ and at <http://www.nap.edu/catalog/11688.html>
- s. Schwartz J. "Societal Benefits of Reducing Lead Exposure." Environ Res 66, 105-124 (July 1994); available from ADEQ and at <http://dx.doi.org/doi:10.1006/enrs.1994.1048>
- t. Trasande L, Landrigan PJ and Schecter C. "Public health and economic consequences of methyl mercury toxicity to the developing brain." Environ Health Perspect.; 113(5) (2005) 590-596.; available from ADEQ and at <http://www.ehponline.org/docs/2005/7743/abstract.html>
- u. U.S. EPA. Cost of Illness Handbook. Available at ADEQ and at www.epa.gov/oppt/coi/

8. A showing of good cause why the rules are necessary to promote a statewide interest if the rules will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

9. The summary of the economic, small business and consumer impact:

Rule Identification. This rulemaking amends A.A.C. Title 18, Chapter 7, Article 2. Refer to item 6 of the preamble for additional information.

Entities Affected. ADEQ expects this rulemaking to directly impact the following classes of persons: public (including consumers and prospective purchasers of real property); owners of sites that need to be cleaned up; businesses conducting remediation; political subdivisions; ancillary businesses supporting clean up activities; financial institutions; ADEQ as the implementing agency; and Arizona Department of Health Services (ADHS).

Brief Overview of Changes and Applicability. In this final rulemaking, ADEQ used the same formulas it used to calculate the previous soil remediation levels (SRLs), and kept the same allowable risk levels with one exception. A more protective standard now will be required for remediation of any site that is intended to be used as a school or child care facility where children are reasonably expected to be in frequent and repeated contact with the contaminated soil that contains a carcinogen.

To protect human health and the environment, this rulemaking updates SRLs. Some contaminants were deleted and others added to the list. About 66 percent of the updated residential predetermined SRLs are within 20 percent of their previous levels, and approximately 74 percent of the updated non-residential predetermined SRLs are within 20 percent of their previous levels. Only 4 percent (22 out of 521 chemicals) of the updated residential predetermined SRLs are an order of magnitude lower (more protective), while 2 percent (10 out of 521) are an order of magnitude higher (less stringent) than their previous level.

The overall impact on the cost and frequency of clean ups is difficult to estimate. Remediating contaminated sites can be expensive, ranging from thousands of dollars to millions of dollars. The cost of developing property is likewise relatively expensive. However, ADEQ expects both the incremental increases and decreases in costs, which could be associated with updated SRLs in this rule, to be relatively small compared to overall project costs.

No specific cleanup standard is prescribed by these rules for a site, although a site in residential use has fewer options. For a non-residential site, the person conducting remediation may choose to remediate to one of five standards: predetermined residential or non-residential, site-specific residential or non-residential (by performing a risk assessment), or background (naturally occurring) standard. This allows persons conducting remediation to control remediation decisions, while considering remediation cost and other factors. However, if a site is in residential use at the time of closure, the site must be remediated to either a residential standard (predetermined or site-specific) or background standard.

ADEQ amended other parts of the rules relating to the use of soil gas samples, Voluntary Environmental Mitigation Use Restriction (VEMUR), and closure documents. Together, these changes have minimal impacts.

Rule requirements cross regulatory program jurisdictions for sites cleaned up under A.R.S. Title 49. The programs include: UST, Solid/Special Waste, Hazardous Waste, Water Quality Assurance Revolving Fund (WQARF), Aquifer Protection Permit, Voluntary Remediation, and any other program that regulates soil remediation under Title 49.

Cost-Benefit Analysis. ADEQ expects this rulemaking to generate incremental benefits that exceed the costs of compliance. If human exposure to contaminants in soil is reduced, one also would expect adverse health effects to be reduced, and in some cases eliminated. Also, illnesses and premature mortality could be reduced. For example, remediating sites according to the revised SRLs, including a more protective standard for schools and child care facilities, could cause a decline in the risk for premature death (known as a statistical death). This decline in premature deaths will have a certain monetary value for individuals. The value may be greater for persons living, working, or attending school or a child care facility in the vicinity of a contaminated site.

A monetary value can be obtained by a contingent valuation method known as willingness-to-pay (WTP). A survey could be conducted to determine the WTP value, which conceivably would vary by geographic location. If reduced contaminant levels resulted in a decreased mortality risk to humans exposed by as little as 1 in a 100,000, one less person would be expected to die prematurely in a population of 100,000 people. Under this scenario, if the average WTP were \$75 across an exposed population of 100,000, the implied value of the statistical premature death avoided would be \$7.5 million annually ($\$75 \times 100,000$).

The ability to monetize, or even quantify, potential impacts of this rulemaking; however, is not possible because the number of sites that will be incrementally impacted in the future and the associated costs to persons conducting remediation under the updated SRLs is not known. Likewise, ADEQ is not able to predict the number of persons impacted by exposures to contaminated sites. However, it is likely that the new SRLs will provide greater public health protection. If a survey were conducted of the potentially exposed populations in the state, ADEQ would expect the average WTP value to generate a value in the millions of dollars for avoided premature deaths. In addition, the value of avoided illnesses also is expected to generate health-saving benefits to Arizona's population. Table one is included in this EIS to aid readers to roughly estimate the potential benefit by avoiding adverse health effects.

The implementation of these rules is not only expected to provide added protection to the general public, but specifically to those persons who work at, or attend a school or a child care facility located on contaminated property. This is because the rules now require a more protective standard (1×10^{-6} excess lifetime cancer risk or simply 10^{-6}) for schools and child care facilities. Though some owners may spend more money cleaning up sites, additional business revenues will be generated for businesses directly involved in remediation as well as ancillary businesses supporting this activity. ADEQ also expects benefits to accrue to entities due to the potential for reduced liability for damages associated with residual contamination that may remain onsite after remediation.

ADEQ expects the economic impact to vary by site because contaminated sites are highly variable in size, physical and geological characteristics, contaminants, extent and concentration of contamination, the presence or absence of groundwater contamination, planned land use, characteristics of nearby populations, and other variables that influence the final cost and benefit of remediation. Additionally, the flexibility the rules allow in selecting an SRL makes it difficult to predict how and to which standard a person conducting remediation will choose to remediate a particular site, which helps determine the cost of remediation. Furthermore, ADEQ cannot predict how changes in SRLs may impact costs to some owners having to remediate contaminated sites to a more protective standard. Costs to remediate some school sites are expected to increase.

Potential costs and benefits for the various entities that ADEQ expects to be directly impacted are set forth below with the specific class of person underlined. Impacts in both qualitative and quantitative terms are discussed. Table 1 contains monetized values of various health endpoints. These values provide an idea of the value of increased public protection from exposure to the chemicals regulated by the rules that could result in adverse health effects.

Public. This class of persons includes consumers and prospective purchasers of remediated property. The implementation of these rules is expected to better protect public health and the environment. Although achieving clean up standards cannot eliminate all risk for cancer and non-cancer adverse health effects, it can help reduce risks by reducing exposure to contaminants. Because the rulemaking reduces the uncertainty associated with estimating risk and provides more scientifically defensible screening levels, remediation efforts can be more effectively focused at sites which have the greatest potential to adversely affect human health and the environment.

Exposure to some of the chemicals could lead to adverse health effects, especially to those people who live and work in the vicinity of contaminated sites. Depending on the nature of the chemical, adverse health effects can range from minor, such as headaches, nausea, eye irritations, and dizziness, to more severe health conditions that could be irreversible, debilitating, and life threatening (e.g., neurological disorders, learning disabilities, developmental delays, kidney and liver damage, cancer, and reproductive disorders). Potential health effects could include: aggravation of existing ailments, chronic and acute health disorders, and premature death.

Adverse impacts arising from exposure to contaminated soils may be evidenced by school absences, work loss days, aggravated asthma, increased emergency room visits and hospital admissions, acute respiratory symptoms, chronic bronchitis, decreased organ function, and other health effects. ADEQ anticipates that potential health benefits that could accrue to the public to be in the millions of dollars (see above discussion on WTP). The value of the adverse health effects of individuals listed in Table 1 range from \$7 to over \$7 million. The sum of these health effects avoided would represent the total benefit. All future benefits would have to be discounted for inflation.

For example, exposure to mercury and lead contamination, can have adverse effects on cognitive development. Loss of IQ can occur which leads to diminished economic productivity that can last a lifetime (Schwartz 1994, *Environ Res*, 66:105-124; Trasande et al. 2005, *Environ Health Perspect* 113(5):590-596).

Although remediation to a risk level of 10^{-6} is 10 times more protective than to 10^{-5} , actual reduction in the manifestation of health problems depends upon the number of persons exposed, the duration and means of exposure, and the concentration of a contaminant at a site. Further, it is difficult to assign monetary value to many of the benefits of this rulemaking, such as reduced incidence of disease, reduced liability, and improved quality of life.

These rules are expected to provide greater protection to sensitive populations, such as pregnant women, infants, children, elderly, and persons with preexisting diseases, congenital defects, and impaired nutritional state. ADEQ has chosen to incorporate a new standard for schools where children are reasonably expected to be in frequent and repeated contact with contaminated soil to be more protective of this sensitive population.

ADEQ expects the increase in the number of school sites that will remediate to meet the 10^{-6} risk level will generate commensurate health benefits that outweigh the costs of remediation. Although the number of sites is unknown that may remediate to this standard, sites that are remediated may provide health benefits to students and staff and nearby residents.

Consumers, taxpayers, and the general public may be indirectly impacted by this rulemaking. Any change in the cost of soil remediation resulting from changes to the remediation standards could be passed along to consumers of products produced by companies that are responsible parties or volunteers. Although there may be an incremental increase in overall property costs, it is expected to be modest compared to the acquisition costs of real estate. Finally, taxes are not expected to increase as a result of this rulemaking.

Persons remediating sites under Title 49 programs. Persons conducting remediation may be private citizens, businesses, school districts, state agencies, or political subdivisions of the state (counties or municipalities). Responsible parties are persons or entities required to conduct soil remediation under Arizona law. A volunteer is any person who is not required by state law to remediate contaminated property, but wishes to do so voluntarily. Thus, a responsible party may include a person who owns contaminated property or who was responsible for the contamination of the property, and persons selling, buying, or developing contaminated property. While volunteers and responsible parties share many similar motives to conduct remediation, responsible parties may be compelled to remediate as required by law and may be more concerned with liability associated with property they have contaminated.

For sites owned by an individual or business that plans on constructing a child care facility, the establishment of a more protective standard for remediating school and child care facilities contaminated with carcinogens would likely increase the cost and frequency of performing cleanups. While remediation to a more protective standard may be more costly to achieve, it is difficult to estimate the increase in the number of sites that may be remediated as a result of this rulemaking. Many sites have more than one contaminant that exceeds the SRLs. The contaminant for which the SRL is most difficult or costly to achieve typically drives the remediation decisions. A case-by-case post remediation analysis would need to be performed to determine if any new SRLs influenced remediation costs. Further, it is impossible to identify how the addition of an SRL for a chemical that does not currently have an SRL might impact clean up costs.

Achieving clean up standards that are based on the most recent scientific research will help reduce liability for damages associated with residual contamination that may remain onsite after remediation. Further, any increase, or decrease, in clean up costs could be reflected in the purchase price of the property. ADEQ cannot predict whether this reduced liability will have a significant beneficial economic impact on property value, insurance coverage, or legal costs.

Businesses involved in remediation. Businesses conducting remediation services will receive revenues correlated to changes in the number and complexity of sites cleaned up. ADEQ expects a modest increase in the number of remediated sites. The rulemaking does not affect a remediation party's eligibility to receive reimbursement of remediation costs either from other responsible parties under WQARF or from the State Assurance Fund.

Some standards have increased, while others have decreased under the final rules. The future number of remediated sites that may be driven by a chemical whose standard has increased or decreased is unknown. It is not possible at this time to predict how the number of risk assessments will change since the rules allow a person conducting remediation the flexibility to choose from numerous options.

The most crucial cost determinant is typically the clean up standard that is chosen by the business conducting remediation. Second is the type of remediation technology utilized. The type of clean up technology utilized will be decided by the person conducting remediation on a case-by-case basis, in conformance with specific program requirements. A combination of technologies may be necessary to achieve the clean up standards to which the site is subject.

For example, typical costs for a consultant to prepare a remedial design for a single site could range \$17,000-\$22,500, while a risk assessment could range \$18,000-\$24,000 (Applied Environmental Consultants, Inc., 12/12/05). Cost will be higher for more complex sites.

Ancillary businesses supporting clean up activities. This class of persons includes contractors, consultants, lawyers, and testing laboratories. The possible modest increase in the number of sites remediated should result in an increased

Notices of Final Rulemaking

demand for support services, including consulting, testing, and increased revenues for this class of persons. The costs of doing business could increase, but profits are expected to be maintained or increase.

Political subdivisions. In addition to counties, cities and towns, these include school districts and the Arizona School Facilities Board (SFB). Because ADEQ expects a modest increase in the number of school sites that may remediate to the 10^{-6} standard, SFB may realize a modest increase in site acquisition and preparation costs. The SFB performs Phase I Environmental Assessments to assess environmental conditions in advance of acquisition. The SFB has numerous school projects that will open during the 2007-2008 school year. Current projects include 32 schools that are expected to serve 45,287 students. Due to projected population growth in Arizona and the need to build new schools, the SFB may need to consider the additional construction costs to clean up sites depending upon the site's environmental condition at the time of acquisition.

The increase in number of sites that may be remediated to the 10^{-6} standard is unknown. However, if a school were planned for construction on a contaminated site, that portion of the school grounds where children would reasonably be expected to be in frequent and repeated contact with contaminated soil should be remediated to the 10^{-6} standard. A couple of examples would be a contaminated football field or play ground.

Assuming the top six inches of a site planned for a school required remediation, the cost to excavate, replace, and compact the excavated soil, and dispose of the soil at a municipal solid waste landfill are shown below:

Volume Calculations

One acre = 43,560 square feet

Excavation depth = 0.5 feet (six inches)

Volume (cubic feet) = 43,560 square feet x 0.5 feet = **21,785 cubic feet of soil per acre**

(Volume conversion: there are 27 cubic feet in a cubic yard. Cubic feet number divided by 27 to calculate cubic yards.)

Volume (cubic yard) = 21,785 cubic feet divided by 27 = **807 cubic yards of soil per acre**

Weight Calculation

A cubic foot of soil weighs approximately 92.6 pounds (lbs.)

Weight per acre = 21,785 cubic feet x 92.6 lbs/cubic foot = **2,039,076 lbs of soil per acre.**

Weight conversion to tons of soil per acre = 2,039,076 lbs divided by 2,000 lbs per ton = **1020 tons of soil per acre.**

Excavation and Replacement Cost Calculation:

Excavation cost (includes personnel and material): \$12 per cubic yard

Excavation Cost per Acre = 807 cubic yards per acre x \$12 per cubic yard = **\$9,684 per acre**

Backfill and compaction (includes personnel, equipment, and transport): \$22 per ton

Backfill, Compaction Cost per Acre = 1,020 tons per acre x \$22 per ton = **\$22,440 per acre**

Transportation Cost Calculation:

The cost to transport the excavated soil from the school to the landfill is approximately **\$0.30 per ton per mile.** Assuming that most schools that will require cleanup are located within 50 miles of an appropriate landfill (there are several landfills that would accept this type of waste within 50 miles of Phoenix or Yuma), the cost to transport the excavated soil to a landfill is approximately **\$15,300 per acre of excavation** (\$0.30 per ton x 50 miles x 1020 tons per acre = \$15,300).

Disposal Rate Cost Calculation:

Disposal Rates - Municipal Solid Waste Landfill:

Contaminated soil (may include toxaphene, dieldrin, etc.) tipping fee: \$25 - \$37 per ton depending on volume.

Disposal Rate Calculation = \$37 per ton x 1,020 tons of soil per acre = **\$37,740**

Total Estimated Remediation Cost per Acre

\$9,684 (excavation and replacement)

\$22,440 (backfill and compaction)

\$15,300 (transportation cost)

\$37,740 (disposal cost)

\$85,164 Per Acre

Assuming three to six acres of soil required remediation (a football field is approximately 1.4 acres), the cost to remediate a contaminated school site could range from \$255,500 to \$511,000. The cost could be less depending on numerous variables. If the school's construction budget is \$22 million, for example, the remediation costs would represent one to two percent of the total cost.

Based upon experience to date, ADEQ believes that the number of existing schools and child care facilities where a cleanup for a carcinogen other than a known human carcinogen will be regulated under an ADEQ program will be small.

Potential-indirect benefits that could accrue to school districts are reducing the absenteeism (staff and students) that could result from exposure to contaminated soils, reduced liability, and improved academic performance of students.

Whenever soil contamination is remediated to nonresidential standards, or an institutional or engineering control is used to meet cleanup standards, the property owner is required to file a Declaration of Environmental Use Restrictions (DEUR) with the relevant County Recorder's Office. A nominal filing fee, determined by the County, is charged to the landowner. In the period from 2001 through 2006, ADEQ approved 61 DEURs. It is impossible to predict whether the number of DEURs filed will increase or decrease as a result of the rules. In either case, the incremental impacts on County revenue and workload are expected to be minimal. Remediated property could enhance development plans and add value to tax bases. Potential benefits could accrue to counties and municipalities through improvement in public health, reduced liability, and reduced legal costs.

Financial institutions. A lender may have an interest in contaminated property. Property values can be influenced by environmental conditions, remediation decisions and the effectiveness of remediation technologies. Therefore, benefits could accrue to financial institutions involved in remediation of such properties.

ADEQ as the implementing agency. Staff in various ADEQ programs already oversee current remediation efforts throughout the state. ADEQ expects that no new program staff will be hired and no new revenues generated as a result of this rulemaking. However, there are costs associated with rule development and implementation (such as informing the regulated community and training staff) but they are expected to be minimal. ADEQ anticipates additional costs associated with responding to questions from the public regarding this rulemaking. ADEQ's web site, fact sheets, and other outreach tools will be available to inform the public about the rulemaking.

There are significant benefits associated with the rules. Because the proposed pre-determined SRLs have been updated and are based on the best scientific evidence available to date, implementation of the rules will enable ADEQ to accomplish its mission of protecting public health and the environment more effectively. Risk-based standards, which are based on the best scientific information currently available, enable ADEQ and the regulated community to focus more effectively on remediating sites that pose the greatest risk.

Arizona Department of Health Services (ADHS). ADHS performs risk assessment review under an Interagency Agreement with ADEQ. The number of risk assessments may increase as a result of this rulemaking. It is possible that a person conducting remediation may choose the risk assessment option more frequently now as a result of updated SRLs. This would result in more reviews performed by ADHS. ADHS revenues received for risk assessment services will merely reimburse the agency for costs incurred. No new net revenues are anticipated.

Employment/Revenue Impacts. No incremental changes in public or private employment are foreseen as a result of this rulemaking. If employment does change, ADEQ expects it to be very minimal. Existing ADEQ and ADHS staff should be able to perform their job responsibilities of reviewing and overseeing site remediation and related activities. Additionally, no new private or public sector employment positions are anticipated as a direct result of this rulemaking. The need for consultants and ancillary businesses may increase. If the number of risk assessments or Phase I Environmental Assessments increases, some consulting companies may hire additional staff, but the increased demand for support may not result in additional staff requirements.

Any new jobs created by businesses that may be established, expanded or relocated will be the result of private business decisions. Other benefits in the form of taxes (income, property, sales, etc.) paid by businesses or employees could accrue to various levels of government. Finally, this rulemaking is not expected to negatively impact state revenues.

Small Businesses Subject to the Rule. Some of the businesses conducting remediation could be classified as small businesses. The rules treat all entities the same and do not differentiate remediation requirements based on business size. Because of this, ADEQ has not tried to isolate the impact on small businesses or to determine the number of responsible parties or volunteers that might be small businesses.

Likewise, a portion of lenders, landowners, prospective purchasers, and consulting firms could be small business owners. ADEQ believes these businesses will be impacted in the same way as large businesses, and that there will be no disproportionate impact on small businesses. ADEQ could not identify alternatives for reducing impacts on small businesses.

In general, ADEQ does not expect the incremental changes in cleanup costs due to the changes in the SRLs will be a determining factor in the decision of whether to develop or purchase a site. In general, if a business (small or otherwise) has made a decision to remediate a contaminated site, it should be unaffected by the incremental increase or decrease in costs that may occur as a result of this rulemaking.

This rulemaking does not create new administrative costs for small and other businesses. There are minimal administrative costs to any business subject to these rules, including small business. The administrative costs associated with cleaning up a contaminated site are not expected to change.

Reduction of Impact on Small Businesses. A.R.S. § 41-1035 requires state agencies to reduce the impact of a rulemaking on the class of small businesses, if possible. ADEQ has determined that the statutes require that the rules apply to all entities performing remediation whether or not they are small businesses because SRLs are based on adverse health effects from contamination regardless of the size of the business conducting remediation. ADEQ exer-

Notices of Final Rulemaking

cised its discretion to reduce adverse impacts to all businesses, including small businesses, by allowing the business conducting remediation the flexibility in selecting a predetermined standard, a site-specific standard, or a background level.

The authorizing statutes for this amendment do not provide a basis for promulgating a SRL for small businesses that is different from other entities. The statutory objectives which are the basis of the rules require ADEQ to establish SRLs that are protective of human health and the environment based on the potential human exposure to contaminated soil at two types of property, residential and non-residential.

Individual businesses, including small businesses, may experience differing costs when complying with the rules. These differing costs will result from site-specific remediation characteristics (type of contaminant, land use, etc.). The rulemaking allows all entities, including small businesses, the flexibility to select the most cost effective remediation standard.

Less Intrusive or Less Costly Alternatives. No less intrusive or less costly alternatives were authorized by the legislature or contemplated by ADEQ. The SRL standards are based on principles accepted by the scientific community and EPA. Under the applicable statutory objectives discussed in this preamble and elsewhere, uniform standards must apply to all entities, whether they are public or private; small or large businesses. The question of costs revolves around contamination in site-specific cases, and what it costs to remediate the contamination. ADEQ has provided alternatives for selecting remediation standards. This flexibility allows parties to choose the option that is most appropriate and cost effective for their individual purposes.

Table 1 Monetized Values of Health Endpoints

Health Endpoint (Adverse-health effect)	Per Case Valuation (1990 dollars, unless indicated)	Per Case Valuation (2003 dollars)
Premature Mortality (value of statistical life)	\$4,800,000	\$7,122,600
Low birth weight	\$348,600*	\$407,860
Chronic bronchitis	\$260,000	\$385,800
Lung cancer (nonfatal)	\$136,460	\$201,900
Hospital admissions for cardiovascular conditions	\$9,500	\$14,100
Emergency room visits for asthma	\$194	\$288
Work loss day (WLD)	\$83	\$123
Mild restricted activity day (RAD)	\$38	\$56
Moderate or worse asthma day	\$32	\$48
Shortness of breath, chest tightness, or wheeze	\$5	\$7

Source: Derived from U.S. EPA, “The Benefits and Costs of the Clean Air Act 1990 to 2010,” Table 6-1, Report to Congress, November 1999. The lung cancer value and low birth weight value are from EPA’s Cost of Illness Handbook (www.epa.gov/oppt/coi/pubs/toc.html). Values have been adjusted for inflation. According to the Consumer Price Index for all urban consumers (U.S. Department of Labor, Bureau of Labor Statistics), the purchasing power of the dollar has declined about 48 percent between 1990 and 2003.

Note that non-medical costs associated with these endpoints are not included.

*In undiscounted 1996 dollars

10. A description of the changes between the proposed rules, including supplemental notices, and final rules (if applicable):

ADEQ corrected the name of the incorporated document in R18-7-201(3), clarified the definition of “school”, added clarifying text in R18-9-203(C), deleted “human” from the phrase “any human carcinogen” in R18-9-205(E), and removed “2006” from the title of Appendix A.

In response to comments from stakeholders, ADEQ added footnotes in Appendix A for the contaminants “Polychlorinated Biphenyls (PCBs), low-risk mixture”, “Polychlorinated Biphenyls (PCBs), high-risk mixture”, “Cyanide (free)” and “Cyanide (hydrogen).” In addition, a sentence was relocated within R18-7-202(E).

Finally, concurrent with G.R.R.C. staff review, minor grammatical and technical changes were made to the final rule to improve the rule’s clarity, conciseness and understandability. These changes include the following:

1. In the definitions of “carcinogen” and “non-carcinogen” in R18-13-201, “chemical” was replaced with “contaminant” to make the definitions more consistent with the rest of the Article.
2. In R18-7-205(F), language was added to clarify that the lower numeric standard is also the more protective.

3. In R18-7-209(B), “may” was changed to “shall” in the first sentence.
4. In Appendix A, a more commonly used name for a contaminant was substituted. This contaminant is referred to in the preambles of the proposed and final rule as “4,4’-methylenediphenyl diisocyanate” (see “Chemicals Added Due to New Toxicity Information”). In Appendix A of the proposed rule, it was listed as “4,4’-methylenediphenyl isocyanate.” ADEQ substituted the more commonly use name “4,4’-methylenediphenyl diisocyanate” in Appendix A.
5. The endnote in Appendix A that describes “ca” and “nc” has been changed to indicate “carcinogenic effects” and “non-carcinogenic effects”.
6. A clarifying footnote was added in Appendix A for arsenic: “¹ Arsenic standards are not risk-based standards, but based on background.”

11. A summary of the comments made regarding the rule and the agency response to them:

Comment 1: (Brown & Caldwell) [R18-7-201, Definitions] Please add definitions for “high-risk mixtures of aroclors” and “low-risk mixtures of aroclors.”

Response: It is impractical to provide a technically valid definition appropriate for these two categories of PCB mixtures. The reason for this is that PCB contamination present at a site is typically identified by the laboratory by Aroclor number (Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260). Each Aroclor contains many different congeners with different chlorine content and configurations that change with time as they are exposed to the environment. Determining whether the PCB mixture present onsite has “high-risk” or “low-risk” characteristics depends on the exposure conditions, individual(s) exposed, and the chlorine content and position on the congeners which make up the mixture present in environmental samples.

It should be assumed that PCBs detected in soil constitute a “high-risk mixture”. If the total PCB concentration reported exceeds the “high risk mixture” standard, then a site specific congener analyses of the PCBs will have to be conducted to determine if the “low-risk mixture” standard is appropriate. To clarify this, the following two new footnotes will be added to Appendix A for both PCB SRLs.

Footnotes:

“⁴ PCBs, low-risk mixture: Use if laboratory analysis confirms that the total PCB concentration consists of 0.5 percent or less of congeners that contain five or more chlorines and no dioxin-like congeners are present.”

“⁵ PCBs, high-risk mixture: Use if only the total PCB concentration is reported by any ADHS licensed analytical method, or if laboratory analysis confirms that the total PCB concentration consists of more than 0.5 percent congeners that contain five or more chlorines or dioxin-like congeners are present.”

Comment 2: (Brown & Caldwell) [R18-7-209] Please modify R18-7-209, Letter of Completion or Alternative Closure Document, to include granting site closures based on soil vapor concentrations as set forth in R18-7-203(C).

Response: Section R18-7-209 describes the conditions required to receive a letter of completion or alternative closure document. One of the conditions is to document that the total contaminant concentration onsite has met the standards outlined in R18-7-203(A) (background standards, predetermined standards, site-specific standards). R18-7-203(C) authorizes the Department to estimate total contaminant concentration in soil using vapor concentrations. The Department may compare the estimated total contaminant concentration derived from soil vapor concentrations with the predetermined standard, site specific standard, or background standard as outlined in R18-7-203(A) when evaluating requests for letters of completion under R18-7-209. Since site closure will be based on the standards outlined in R18-7-203(A), modification of Section R18-7-209 to include R18-7-203(C) is not appropriate. No change to the rule.

Comment 3: (Brown & Caldwell) [R18-7-202(E)(2)] Move the second sentence, which states, in part, “*A site is considered characterized when...*” to subsection (1). Additionally, the sentence should be modified to state that the Department will determine when the site is characterized. Site characterization remains the responsibility of the requesting party.

Response: ADEQ agrees with the commenter about the location of the second sentence and has moved the second sentence to subsection (1). ADEQ disagrees with the recommendation to modify the sentence clarifying that ADEQ will determine when the site is characterized. Under R18-7-209(B), the applicable ADEQ program is authorized to evaluate the information submitted to verify compliance with the standards set forth in this Article.

Comment 4: (Brown & Caldwell) [R18-7-209(C)] Modify subsection (C) to state that the revocation or amendment of the Letter of Completion or alternative closure document will be limited to the contaminant(s) of concern for which the Department received inaccurate information or any condition that was unknown to it. If the Department chooses to revoke or amend the Letter of Completion or alternative closure document, the contaminant(s) of concern that were considered characterized and/or remediated prior to effective date of the proposed rules should not be subject to the new requirements.

Response: ADEQ disagrees with this recommendation to limit the Department’s authority in this rule to revoke or amend the Letter of Completion or alternative closure document. Applicable Departmental programs have specific statutory authority governing closing and reopening sites. This authority varies depending upon the applicable pro-

gram. For example, the Voluntary Remediation Program has specific authority under A.R.S. § 49-181(E) to rescind or amend a no further action determination. No change to the rule.

Comment 5: (Home Builders Association of Central Arizona) [R18-7-209] The preamble, at 12 A.A.R. 3127, in the paragraph beginning “The second category”, suggests that a person may request a letter if the person is not remediating under any specific ADEQ program. Revise R18-7-209 to specifically allow such voluntary remediators to request a letter of compliance.

Response: ADEQ did not intend to imply in the preamble that a person who remediates a site but not under any program could request a closure document. In fact, R18-7-202(B) clearly states that the Article “applies to a person not legally required to conduct soil remediation, but who chooses to do so *under any program administered by the Department.*” (Emphasis added) ADEQ has edited the preamble language to clarify that persons conducting remediation under R18-7-202(A) and (B) are the only parties that can request closure. No change to the rule.

Comment 6: (Home Builders Association of Central Arizona) [R18-7-203(C)] Clarify that the use of soil vapor samples is permissive and that ADEQ will not arbitrarily make the use of soil vapor samples mandatory.

Response: Soil gas samples are only relevant at sites where volatile chemicals are present, that is, those chemicals that exist as a gas at the ambient temperature. Therefore, the vast majority of chemicals in Appendix A would not be measurable utilizing the soil gas sampling method. The option to use soil gas sampling when volatile chemicals are present is driven by site-specific conditions and the nature of the release or spill. For example, soil gas samples may be approved at a contaminated site where soil sediment is not present for testing, but instead only cobbles, or large stones are present. Because collecting a soil matrix sample would be technically impracticable in these circumstances, soil vapor may be the appropriate way to determine that the contaminant has been remediated.

With the wide variation of site characteristics and because it is ADEQ’s decision to issue closure documents, ADEQ must retain the authority to determine when the use of soil vapor sampling is appropriate. No change to the rule.

Comment 7: (GeoTrans, Inc.) [Appendix A] The proposed SRLs for free cyanide and hydrogen cyanide should be replaced with the following SRLs for cyanides as the most appropriate standards that can be properly implemented using the existing analytical methods for total cyanides:

Residential SRL for total cyanides: 11 mg/kg

Nonresidential SRL for total cyanides: 35 mg/kg

Response: The purpose of the soil standards is to provide conservative cleanup levels for contaminants in soils that are protective of even the most sensitive individuals among our population. In the current rule, there are standards for free cyanide, hydrogen cyanide and eight metal complexes of cyanide. However, only toxicity data for free cyanide and hydrogen cyanide exist. The **assumed** toxicity used to derive the SRL for the listed metal complexes is based on free cyanide, not a toxicity value unique for each metal complex form. As a result of the limited availability of toxicity data, only predetermined standards for free cyanide and hydrogen cyanide were developed in the proposed rule.

The issue raised by the commenter is that there is no laboratory method for soil to distinguish hydrogen cyanide from free cyanide to directly compare with the proposed predetermined standards. In addition, cyanides in soil can form hydrogen cyanides under certain soil conditions and/or when exposed to ultraviolet light.

ADEQ has determined that although laboratories can measure total cyanide, it is not practical to develop a standard for total cyanide because the risk associated with cyanide is from hydrogen or free cyanide and not the stable metal complexes of cyanide. As an alternative, additional laboratory analyses may be required to comply with the standards based on certain conditions. If cyanide concentrations using any laboratory method exceed the hydrogen cyanide standard, then hydrogen cyanide vapor samples should be collected at the site. If total cyanides exceed the free cyanide standard, then additional analyses should be performed to differentiate the cyanide metal complexes from the free cyanide. For clarity, the following two new footnotes will be added in Appendix A for free cyanide and hydrogen cyanide:

Footnotes:

“² Cyanide (free): Free cyanide is a subset of total cyanides. If any ADHS approved method for total cyanide reports a concentration exceeding this standard, further analyses to differentiate free cyanide from other cyanide metal complexes is required.”

“³ Cyanide (hydrogen): If the cyanide concentrations using any method exceed the hydrogen cyanide standard, then hydrogen cyanide vapor samples should be collected at the site.”

Comment 8: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The proposed rules apply more stringent SRLs in the lower exposure school and child care facility setting than in the higher exposure residential setting.

Response: There is no published scientific literature available which supports the claim that exposures in schools and child care facilities are lower than residential exposures. In fact, there are numerous studies that conclude quite the opposite. For a discussion of the unique exposures and potential health risks potentially posed at school sites, please see *Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites, Final Report* (Cali-

California EPA, February 2004); *Child-specific Exposure Factors Handbook* (U.S. EPA, September 2002); *America's Children and the Environment: Measures of Contaminants, Body Burdens, and Illnesses* (U.S. EPA, February 2003); *Outdoor, Indoor, and Personal Exposure to VOCs in Children* (National Institutes of Health, June 2004); and *A Framework for Assessing Health Risks of Environmental Exposures to Children* (September 2006). Numerous other publications are available.

U.S. EPA recently published the *Guidelines for Carcinogen Risk Assessment* (2005) and *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (2005). These documents specifically discuss the importance of addressing cancer-causing chemicals (carcinogens) which result in mutations of the DNA (mutagens), and effects when children less than 16 years old are exposed to cancer causing chemicals. When exposures to these chemicals occur early in life, there is evidence of greater susceptibility for developing cancer. This assessment of a mutagenic mode of action has not been typically performed or presented in the existing analyses of carcinogens. Therefore, EPA has developed a consistent methodology for assessment of these mutagenic, cancer-causing chemicals.

ADEQ did not attempt to modify the existing equations for residential SRLs to incorporate the carcinogenic effect on children under 16 years old. ADEQ has accounted for this additional need of protection during early-life exposures by introducing a school/child care facility SRL which adjusts the residential SRLs by a factor of 10; reducing the target risk level from 1 in 100,000 to 1 in 1,000,000. This conservative assumption is applied to all carcinogens at schools or child care facilities where children are reasonably expected to be in frequent and repeated contact with soil because: 1) the list of mutagenic carcinogens has yet to be completed; 2) more children are potentially exposed at a single school/child care facility than at a single residence; and 3) parents can exercise more control over the child's environment and behavior at home than can be achieved at a school. ADEQ has not published more protective school/child care facility SRLs for those chemicals which appear in the table as known human carcinogens because they are already calculated to achieve a target risk level of 1 in 1,000,000. No change to the rule.

Comment 9: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) A 1 in 1,000,000 risk factor for schools will just require more risk assessments since ADEQ allows a risk range down to 1 in 10,000.

Response: ADEQ does not require site-specific risk assessments and would prefer that risk assessments not be conducted at schools and child care facilities in lieu of cleaning up soil contamination to SRLs which are protective of children. However, both options are available to be used at the discretion of the owners/community.

With regard to risk factors, ADEQ is consistent with and adopted the EPA standard of selecting final cleanup remedies, for any given site, which result in a cumulative excess lifetime cancer risk ranging between 1 in 1,000,000 (or 10^{-6}) and 1 in 10,000 (or 10^{-4}). This means the estimated risk is based on a **cumulative** risk assessment for **all** chemicals and radioisotopes in **all** media (air, water, soil, food) for **all** exposure pathways and routes. The risk range is mandated by the *Comprehensive Environmental Response, Compensation and Liability Act*, established in regulation (National Contingency Plan) and implemented by EPA through an extensive series of manuals and supplements to *Risk Assessment Guidance for Superfund*. EPA does not and has never allowed for a single chemical to be cleaned up to a target risk of 1 in 10,000 in the absence of a cumulative site-specific risk assessment which evaluates all the other chemicals and exposures.

Individual SRLs are not based on a cumulative site-specific risk assessment. Rather, they are predetermined standards calculated by reversing the equations used in risk assessment methodology, but **only** for generic exposures to **only** a single chemical found **only** in soil. The SRL accounts for nothing else required in a cumulative risk assessment. The method for calculating individual SRLs is similar to that conducted by U.S. EPA *Soil Screening Guidance* (1996 and subsequent supplements). EPA uses this reverse aspect of risk assessment calculation for a single chemical **only** to identify areas needing further investigation, and chemicals which may be "screened" from further consideration.

It is invalid to compare the school or child care facility SRL for a single chemical to a site-specific cumulative human health risk assessment. No change to the rule.

Comment 10: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The proposed school/child care facility SRLs [R18-7-205(E)] are more stringent than residential SRLs and conflicts with legislation provided in Senate Bill 1009 for selection of sites for state-funded school facilities.

Response: ADEQ does not agree with the commenter that a more protective soil clean up standard for carcinogens at school and child care facilities conflicts with School Facility Board (SFB) requirements under Arizona Revised Statute § 15-2132(B)(1). ADEQ and the SFB are state agencies with different obligations under statute. In general, ADEQ's requirements are in Title 49, while those for the SFB, are found in Title 15.

Senate Bill 1009 and A.R.S. § 15-2132 requires the SFB to conduct environmental site assessments for school building projects. In addition, the bill requires the SFB to meet the same criteria established for residential properties before approval of a new state-funded school building project. The proposed rule does not conflict with Senate Bill 1009. The standards set for schools and child care facilities where children are reasonably expected to be in frequent and repeated contact with soil are based on the same criteria established for a residential exposure scenario. ADEQ has chosen to use the most protective standard authorized by statute to protect children from cancer causing contaminants at school. No change to the rule.

Comment 11: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The proposed rules continue the inappropriate use of EPA Region 9's preliminary remediation goals.

Response: The purpose of EPA Region 9 preliminary remediation goals is for screening purposes, and as a result, requires risk assessments to develop site specific standards. ADEQ was specifically requested by stakeholders, during the development of the existing soil rules and the currently proposed soil rules, to publish predetermined remediation standards in rule.

The proposed rules allow flexibility in determining site standards. R18-7-203 allows a person conducting remediation to choose from the predetermined standards, a site specific standard or a background standard. A person conducting remediation can request site closure if the listed predetermined standards are achieved without conducting costly risk assessments to develop site specific or background standards. A person conducting remediation can also choose to develop a site specific standard. This flexibility allows the person conducting remediation to choose the most cost effective approach. No change to the rules.

Comment 12: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) EPA Region 9 preliminary remediation goals fail to use a blended child and adult exposure in its non-cancer algorithm.

Response: It is not appropriate to use a residential life-span of 30 years to calculate SRLs for non-carcinogenic chemicals. Specifically, children are not tiny versions of adults, and should not be treated as such when evaluating impacts to their health. Non-carcinogens differ from carcinogens in that many do not require an extended lifetime exposure to result in impaired health. To protect children from health affects such as asthma, delayed learning abilities and motor skill development, disruption of important metabolic processes for growth, and even disruption in endocrine related gender-based development, SRLs are calculated using that window of the life cycle which is most susceptible to adverse impact, *i.e.*, years 0 – 6. No change to the rules.

Comment 13: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) ADEQ's Economic Impact Statement analysis fails to comply with the statutory requirements for such statements. Specifically, the effect of the more protective standard for carcinogens at future school and child care facilities.

Response: ADEQ does not agree with the commenter that the Economic Impact Statement fails to meet statutory requirements. However, the EIS has been modified with a more detailed discussion of this issue.

Comment 14: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) Application of a 10^{-5} target risk for the calculation of SRLs for all classifications of carcinogens is equally protective as the target risk of 10^{-6} for the calculation of the SRL for known human carcinogens (also known as Class A).

Response: ADEQ disagrees that a target risk of 10^{-5} is equally protective for the calculation of SRLs as a target risk of 10^{-6} . In fact, a target risk of 10^{-6} is 10 times more protective than a target risk of 10^{-5} . The use of the 10^{-6} target risk for determining the SRL for known human carcinogens is a risk management decision to protect the most sensitive population. Because these chemicals are known to cause cancer in humans, ADEQ has chosen to use the most protective standard provided by law.

The distinction between categories of carcinogens is based on the weight of evidence that is available. The difference in classification of carcinogens is not discriminated in the risk assessment process, if one elects to do a site-specific risk assessment, until the uncertainty of the risk characterization is discussed. This plays a very important role in risk management decision-making, and should never be separated from the process of deciding where in the range of 10^{-6} to 10^{-4} cumulative risk is acceptable for those who are affected. No change to the rule.

Comment 15: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The exemption in R18-7-202(G) should apply to narrative soil remediation standards in pre-existing orders.

Response: During the two year stakeholder process, ADEQ repeatedly requested examples of documents that should be included in the exemptions list in R18-7-202(G). No comments or examples were provided that discussed narrative standards for soil. ADEQ does not agree with the commenter and is not aware of any narrative soil remediation standards in any existing orders. No change to the rule.

Comment 16: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The proposed arsenic SRL will force many parties to cleanup below background levels or force parties to declare property unsuitable for residential uses based on the following assertions:

Assertion 1) ADEQ inappropriately relies upon toxicity factors from drinking water studies which cannot be directly extrapolated to toxicity of arsenic in soil.

Assertion 2) The proposed SRL for arsenic overestimates health risk by assuming all arsenic present in soil is bio-available.

Assertion 3) Because the proposed SRL for arsenic is below existing background concentrations in many Arizona soils, project costs will increase by forcing background sampling for determining site-specific background levels, or by forcing the performance of a risk assessment for determining site-specific risk-based cleanup levels.

Response: ADEQ disagrees with all of these comments. The existing arsenic SRL is identical to the proposed SRL, and is based solely on a background value for the arithmetic average of soil arsenic concentrations collected at

numerous locations throughout Arizona. ADEQ relied upon the same study which the existing SRL used for background determination from soil samples collected by the USGS (*Evaluation of Background Metals Concentrations in Arizona Soils*, Earth Technology, 1991).

Toxicity or a bioavailability factor of arsenic is irrelevant since no risk-based calculation of any kind was conducted for determining the arsenic SRL. Both the residential and non-residential SRL for arsenic are based on a background value and remain unchanged from the current standard of 10 mg/kg. No change to the rule.

Comment 17: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The proposed non-residential SRL for lead is inconsistent with results given by EPA's Adult Lead Model.

Response: ADEQ disagrees with this comment. As stated in the preamble, ADEQ concurs with the input parameters used and conclusions drawn by EPA in the use of the Adult Lead Model for deriving the level of lead exposure which is protective of child-carrying women in the workplace. EPA used the most recent national census and health survey results of blood levels in adult women to develop the residential SRL. The supporting literature, methodologies, and technical information for this analysis are available at <http://www.epa.gov/superfund/programs/lead/products.htm>.

EPA and the Centers for Disease Control are now re-evaluating the adequacy of the target blood lead level previously assumed to be protective, and are suggesting that lower blood levels may be appropriate. ADEQ cannot justify raising the lead SRL contrary to the evidence at large. No change to the rule.

Comment 18: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The vanadium SRL was derived using an inappropriate toxicity factor, and the SRL is impractical because it is within range of background.

Response: ADEQ does not concur that the toxicity factor (0.009 mg/kg-day) published in the EPA integrated risk information system (IRIS) database is the most appropriate to use in calculating the vanadium SRL. ADEQ has chosen to be consistent with EPA Region 9's use of the more recent NCEA (EPA's National Center for Environmental Assessment) value of 0.001 mg/kg-day. The use of the NCEA toxicity factor is consistent with EPA's guidance in selecting toxicity factors from the hierarchical sources established in EPA's December 5, 2003 Directive.

The toxicity assessment published in IRIS is outdated and from 1986. Toxicity assessments which support the IRIS database are periodically re-assessed. In the event that NCEA has conducted more recent toxicity assessments, these may be relied upon. As shown by literature review, more recent studies have been published. In fact, International Agency for Research on Cancer (IARC, November 2003) has evaluated available data and determined that sufficient evidence exists to classify vanadium as possibly carcinogenic to humans. Until IRIS updates their toxicity assessment, use of the NCEA value is warranted.

As with any other metal which is naturally occurring but is also subject to regulation when a release to the environment has occurred, site-specific background may be evaluated if concentrations exceed the residential SRL of 78 mg/kg, or non-residential SRL of 1,000 mg/kg. However, the average (71 mg/kg) background level of vanadium published in the Earth Technology (1990) report does not exceed the residential SRL. No change to the rule.

Comment 19: (Arizona Chamber of Commerce and Industry/Greater Phoenix Chamber of Commerce) The TCDD (dioxin) SRL is significantly below the federal cleanup level. The proposed TCDD (dioxin) residential and non-residential SRL, 3.9×10^{-6} mg/kg and 1.6×10^{-4} mg/kg, respectively are significantly below federal cleanup levels for TCDD toxicity equivalents (TEQs).

Response: Because the comment does not explain the significance of the SRL or applicability of TEQs for comparison to TCDD (dioxin), an explanatory background must first be presented in this response. This background is provided to explain why 1.0×10^{-3} mg/kg of total TEQ is not the same as 1.0×10^{-3} mg/kg TCDD.

2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) is also called dioxin. However, there is a large group of compounds which are dioxins, and others which are dioxin-like. TCDD is simply the most toxic of all the dioxins or dioxin-like compounds (DLCs). In environmental media, as well as in food products we eat and our own bodies, contamination consists of a mixture of these compounds which may have little or no TCDD present. Therefore, the concentration and types of dioxins/DLCs present is variable. Most importantly, these compounds are slow to degrade and tend to accumulate in tissues. The dioxins/DLCs that are present contribute to the mixture's overall toxicity. In order to estimate this total toxicity, certain dioxins/DLCs have been assigned their own toxicity relative to TCDD. Each has a toxic equivalency factor (TEF) which is 10-times, 100-times, and so forth, less than the toxicity of TCDD. You simply multiply a particular dioxin/DLC concentration by its TEF for each one present, and add them to produce the total toxic equivalent quotient (TEQ) for the mixture. This allows us to express the combined toxicity of the mixture in terms of an equivalent amount of only TCDD. This methodology was developed and published by the international World Health Organization (WHO) in 1998. It still continues to be used, and is intended to be updated as adequate studies become available. TEFs may be added or revised in the future using the WHO methodology or body burden methodology.

It is noteworthy to mention that Arizona, like many other states, currently has a cleanup standard which is more stringent than the 1998 EPA preliminary remediation goal cited by the commenter, *i.e.*, 1.0×10^{-3} mg/kg for total TCDD toxic equivalent quotient (TEQ). The current ADEQ dioxin residential SRL is 3.8×10^{-5} mg/kg, and EPA Region 9 uses 3.9×10^{-6} mg/kg. Furthermore, the 1.0×10^{-3} mg/kg of total TEQ "federal cleanup level" was a recommendation

Notices of Final Rulemaking

issued in 1998 under a policy decision which assumed EPA would publish the dioxin reassessment that same year. EPA's reassessment has not been finalized.

The SRL utilizes the toxicity factor for TCDD which was first published in the 1985 EPA assessment of human health risks. Since then, numerous other studies have been conducted and evaluated which resulted in the WHO TEF methodology for addressing dioxins other than TCDD, and an interagency cooperative development of the December 2003 U.S. EPA draft reassessment, *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin [TCDD] and Related Compounds*. This draft reassessment for dioxins was reviewed by the National Academy of Sciences (NAS). The NAS evaluation of the EPA dioxins reassessment was released in July 2006. In it, NAS provided EPA with recommendations for additional documentation to support EPA conclusions and methodology. However, it remains to be seen whether these additional considerations will result in EPA revising the toxicity reassessment for dioxin, *i.e.* the toxicity may remain the same, increase, or decrease.

However, it is clear that until the EPA publishes the final health reassessment, it remains prudent to be consistent with EPA Region 9, and current practices of toxicity source utilization per EPA Directive (2003). No change to the rule.

12. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules.

Not applicable

13. Incorporations by reference and their location in the rules:

<u>Incorporated Material</u>	<u>Location</u>
------------------------------	-----------------

“Guidelines for Carcinogen Risk Assessment” R18-7-201

14. Were these rules previously made as emergency rules?

No

15. The full text of the rules follows:

TITLE 18. ENVIRONMENTAL QUALITY

**CHAPTER 7. DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIAL ACTION**

ARTICLE 2. SOIL REMEDIATION STANDARDS

Section

- R18-7-201. Definitions
- R18-7-202. Applicability
- R18-7-203. Remediation Standards
- R18-7-204. Background Remediation Standards
- R18-7-205. Pre-Determined Remediation Standards
- R18-7-206. Site-Specific Remediation Standards
- R18-7-207. ~~Voluntary Environmental Mitigation Use Restriction (VEMUR)~~ Site-specific Remediation Standards for Nitrates and Nitrites
- R18-7-208. Declaration of Environmental Use Restriction (DEUR)
- ~~R18-7-208. R18-7-209. Letter of Completion or Alternative Closure Document~~
- ~~R18-7-209. R18-7-210. Notice of Remediation and Repository~~
- Appendix A. Soil Remediation Levels (SRLs)
- ~~Appendix B. Notice of Voluntary Environmental Mitigation Use Restriction by Owner or Owners~~
- ~~Appendix A-B. 1997 Soil Remediation Levels (SRLs)~~
- ~~Appendix C. Cancellation of Voluntary Environmental Mitigation Use Restriction by Owner or Owners~~ Repealed

ARTICLE 2. SOIL REMEDIATION STANDARDS

R18-7-201. Definitions

In addition to the definitions provided in A.R.S. §§ 49-151 and 49-152, the following definitions apply in this Article:

1. “Aquifer Protection Permit Program” means the system of requirements prescribed in A.R.S. Title 49, Chapter 2, Article 3 and A.A.C. Title 18, Chapter 9, ~~Article 1~~ Articles 1 through 7.
2. “Background” means a concentration of a naturally occurring contaminant in soils.
3. ~~“Cancer Group” means a category of chemicals listed by a weight of evidence assessment by the United States Environmental Protection Agency to evaluate human carcinogenicity. Based on this evaluation, chemicals are placed in 1 of the following categories: A – known human carcinogen; B1 or B2 – probable human carcinogen; C – possible human carcinogen; D – not classified as to human carcinogenicity; and E – evidence of non-carcinogenicity in~~

- ~~humans.~~
- 4-3. “Carcinogen” or “carcinogenic” means a contaminant which the potential of a contaminant to cause cancer in humans as determined by lines of evidence in accordance with a narrative classification in “Guidelines for Carcinogen Risk Assessment”, EPA/630/P-03/001F, March 2005, (and no future editions), which is incorporated by reference. “Guidelines for Carcinogen Risk Assessment” is available from ADEQ and at <http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=116283>, has a cancer group designation of Class A, B1, B2, or C, but does not include a substance having cancer group designations D or E. The cancer group designation is found in Appendix A to the rule.
4. “Child care facility” means any permanent facility on a property or portion of property in which care or supervision is provided for children below the age of 18, unaccompanied by a parent or guardian, for periods of less than 24 hours per day. Child care facility does not include private homes or facilities that care for fewer than five children.
5. “Contact” means exposure to a contaminant through ingestion, inhalation, or dermal absorption.
6. “Contaminant” means a substance regulated by the programs listed in R18-7-202(A) or R18-7-202(B) or defined in A.R.S. § 49-171(2).
7. “Department” means the Arizona Department of Environmental Quality.
8. “Deterministic Risk Assessment Methodology risk assessment methodology” means a site-specific human health risk assessment, performed using a specific set of input variables, exposure assumptions, and toxicity criteria, represented by point estimates for each receptor evaluated, which results in a point estimate of risk.
9. “Declaration of Environmental Use Restriction” or “DEUR” means a restrictive covenant as described in A.R.S. § 49-152.
- 9-10. “Ecological Community community” means an assemblage of populations of different species within a specified location in space and time.
- 10-11. “Ecological Receptor receptor” means a specific ecological community, population, or individual organism, protected by federal or state laws and regulations, or a local population which that provides an important natural or economic resource, function, and value.
- 11-12. “Ecological Risk Assessment” is risk assessment” means a scientific evaluation of the probability of an adverse effect to ecological receptors from exposure to specific types and concentrations of contaminants. An ecological risk assessment contains 4 components: identification of potential contaminants; an exposure assessment; a toxicity assessment; and a risk characterization.
- 12-13. “Engineering Control control” means a remediation method, such as a barrier or cap, which is used to prevent or minimize exposure to contaminants, and includes technologies that reduce the mobility or migration of contaminants.
- 13-14. “Excess Lifetime Cancer Risk lifetime cancer risk” means the increased risk of developing cancer above the background cancer occurrence levels due to exposure to contaminants.
- 14-15. “Exposure” means contact between contaminants and organisms.
- 15-16. “Exposure Pathway pathway” means the course a contaminant takes from a source to an exposed organism. Each exposure pathway includes a source or release from a source, an exposure point, and an exposure route. If the exposure point differs from the source, transport/exposure media (that is, air, water) are also included.
- 16-17. “Exposure Point point” means a location of potential contact between a contaminant and an organism.
- 17-18. “Exposure Route route” means the way a contaminant comes into contact with an organism (that is, by ingestion, inhalation, or dermal contact).
18. “Greenfields Pilot Program” means the system of requirements prescribed in Laws 1997, Ch. 296, § 11.
19. “Groundwater” means water in an aquifer as defined in A.R.S. § 49-201(2).
20. “Hazard Index” means the sum of hazard quotients for multiple substances and/or multiple exposure pathways, or the sum of hazard quotients for chemicals acting by a similar mechanism and/or having the same target organ.
21. “Hazardous Waste Management Program” means the system of requirements prescribed in A.R.S. Title 49, Ch. 5, Article 2 and 18 A.A.C. 8, Article 2.
22. “Hazard Quotient quotient” means the value which quantifies non-carcinogenic risk for one chemical for one receptor population for one exposure pathway over a specified exposure period. The hazard quotient is equal to the ratio of a chemical-specific intake to the reference dose.
23. “Imminent and substantial endangerment to the public health or the environment” has the meaning found in A.R.S. § 49-282.02(C)(1).
24. “Institutional control” means a legal or administrative tool or action taken to reduce the potential for exposure to contaminants.
25. “Letter of Completion” means a Departmental statement which that indicates whether the property in question has met the soil remediation standards set forth in this Article.
26. “Migrate” or “Migration migration” means the movement of contaminants from the point of release, emission, discharge, or spillage: through the soil profile; by volatilization from soil to air and subsequent dispersion to air; and by water, wind, or other mechanisms.
27. “Non-carcinogen” means a contaminant that has the potential upon exposure to an individual to cause adverse health effects other than cancer.

Notices of Final Rulemaking

- ~~27-28.~~ “Non-Residential Site Specific Remediation Level” “Non-residential site-specific remediation level” means a level of contaminants remaining in soil after remediation ~~which that~~ results in a cumulative excess lifetime cancer risk between 1×10^{-6} and 1×10^{-4} and a Hazard Index no greater than 1 based on non-residential exposure assumptions.
- ~~28-29.~~ “Nuisance” means the activities or conditions ~~which that~~ may be subject to A.R.S. §§ 49-141 and ~~49-104(A)(11)~~.
- ~~29-30.~~ “Person” means any public or private corporation, company, partnership, firm, association, or society of persons, the federal government and any of its departments or agencies, this state or any of its agencies, departments, political subdivisions, counties, towns, municipal corporations, as well as a natural person.
- ~~30-31.~~ “Population” means an aggregate of individuals of a species within a specified location in space and time.
- ~~31-32.~~ “Probabilistic Risk Assessment Methodology” “risk assessment methodology” means a site-specific human health risk assessment, performed using probability distributions of input variables and exposure assumptions ~~which that~~ take into account the variability and uncertainty of these values, which results in a range or distribution of possible risk estimates.
- ~~32-33.~~ “Reasonable Maximum Exposure” or “RME” means the highest human exposure case that is greater than the average, but is still within the range of possible exposures to humans at a site.
- ~~33-34.~~ “Remediate” or “remediation” has the meaning found in A.R.S. § ~~49-151(2)~~ 49-151.
- ~~35.~~ “Reference dose” means the toxicity factor expressed as a threshold level in units of (mg/kg-day) at which non-cancer effects are not expected to occur.
- ~~34-36.~~ “Repository” means the Department’s database, established under A.R.S. § ~~49-152(D)~~ 49-152(E), from which the public may view information pertaining to remediation projects ~~for which a Notice of Remediation has been submitted or a Letter of Completion has been issued.~~
- ~~35-37.~~ “Residential Site Specific Remediation Level” “site-specific remediation level” means a level of contaminants remaining in the soil after remediation ~~which that~~ results in a cumulative excess lifetime cancer risk between 1×10^{-6} and 1×10^{-4} and a Hazard Index no greater than 1 based on residential exposure assumptions.
- ~~36-38.~~ “Residential Use” “use” has the meaning found in A.R.S. § ~~49-151(3)~~ 49-151.
- ~~39.~~ “School” means any public institution under the jurisdiction of the Arizona State Board of Education or the Arizona State Board for Charter Schools, or any non-public institution, established for the purposes of offering instruction to children attending any grade from preschool through grade 12.
- ~~37-40.~~ “Site-Specific Human Health Risk Assessment” is “Site-specific human health risk assessment” means a scientific evaluation of the probability of an adverse effect to human health from exposure to specific types and concentrations of contaminants. A site-specific human health risk assessment contains four components: identification of potential contaminants; an exposure assessment; a toxicity assessment; and a risk characterization.
- ~~38-41.~~ “Soil” means all earthen materials, including moisture and pore space contained within earthen material, located between the land surface and groundwater including sediments and unconsolidated accumulations produced by the physical and chemical disintegration of rocks.
- ~~39-42.~~ “Soil Remediation Level” “remediation level” or “SRL” means a pre-determined risk-based standard based upon the total contaminant concentration in soil, developed by the Arizona Department of Health Services pursuant to A.R.S. § ~~49-152(A)(1)(a)~~ 49-152(A)(1) and listed in Appendix A or, as applicable, in Appendix B.
- ~~40-43.~~ “Solid Waste Management program” “Program” means the system of requirements prescribed in A.R.S. Title 49, Ch. 4, ~~Article 4~~ and the rules adopted under those statutes.
- ~~41-44.~~ “Special Waste Management program” “Program” means the system of requirements prescribed in A.R.S. Title 49, Ch. 4, Article 9 and 18 A.A.C. § ~~13, Article 3~~ Articles 13 and 16.
- ~~42-45.~~ “Underground Storage Tank program” “Program” or “UST program” “Program” means the system of requirements prescribed in A.R.S. Title 49, Ch. 6, Article 1 and 18 A.A.C. 12.
- ~~43.~~ “Voluntary Environmental Mitigation Use Restriction” or “VEMUR” means, pursuant to A.R.S. § ~~49-152(B)~~, a written document, signed by the real property owner and the Department, and recorded with the county recorder on the chain of title for a particular parcel of real property, which indicates that a remediation to a level less protective than residential standards has been completed and, unless subsequently canceled, that the owner agrees to restrict the property to non-residential uses.
- ~~44.~~ “Voluntary Remediation Program” means the system of requirements prescribed in A.R.S. § ~~49-104(A)(17)~~.
- ~~45-46.~~ “Water Quality Assurance Revolving Fund” or “WQARF” means the system of requirements prescribed in A.R.S. Title 49, Ch. 2, Article 5 and 18 A.A.C. ~~7, Article 1~~ 16.
- ~~46.~~ “WQARF Voluntary Program” means the system of requirements prescribed in A.R.S. §§ ~~49-282.05 and 49-285(B)~~.

R18-7-202. Applicability

- A. This Article applies to a person legally required to conduct soil remediation by any of the following regulatory programs administered by the Department:
1. The Aquifer Protection Permit Program.
 2. The Hazardous Waste Management Program.
 3. The Solid Waste Management Program.
 4. The Special Waste Management Program.

Notices of Final Rulemaking

5. The Underground Storage Tank Program.
 6. The Water Quality Assurance Revolving Fund.
 7. Any other program under A.R.S. Title 49 that regulates soil remediation.
- B. This Article also applies to a person who is not legally required to conduct soil remediation, but who chooses to do so under any of the following programs program administered by the Department:
1. ~~The Greenfields Pilot Program.~~
 2. ~~The Voluntary Remediation Program.~~
 3. ~~The WQARF Voluntary Program.~~
- C. The requirements of this Article apply in addition to any specific requirements of the programs described in subsections (A) or (B).
- D. This Article is limited to soil remediation.
- E. ~~A person who is remediating soil at a site which was characterized before the effective date of this Article shall comply with either the Soil Remediation Standards adopted as an interim rule on March 29, 1996, or the Soil Remediation Standards adopted in this Article. A person who is remediating a site shall comply with the numeric soil remediation standards identified in either Appendix A or Appendix B if both of the following conditions are met:~~
1. The site was characterized before May 5, 2007. A site is considered characterized when the laboratory analytical results of the soil samples delineating the nature, degree, and extent of soil contamination have been received by the person conducting the remediation.
 2. The site was remediated or a risk assessment completed before May 5, 2010. A risk assessment or remediation is considered completed when site closure, that meets the conditions in R18-7-209, has been requested.
- If either subsection (1) or subsection (2) is not met, a person who is remediating a site shall comply with the numeric soil remediation standards identified in Appendix A.
- F. Nothing in this Article limits the Department's authority to establish more stringent soil remediation levels in response to:
1. A nuisance.
 2. An imminent and substantial endangerment to the public health or the environment.
- G. ~~This Article does not apply to persons remediating soil to numeric soil remediation levels specified in orders of the Director or orders of any Court that have been entered~~ the following documents and entered into, issued, or approved before the effective date of this Article May 5, 2007:
1. Orders of the Director;
 2. Orders of any Court;
 3. Work agreements approved by the Director pursuant to A.R.S. § 49-282.05;
 4. Closure plans approved by the Director pursuant to R18-8-265;
 5. Post-closure permits approved by the Director pursuant to R18-8-270;
 6. Records of Decision approved by the Director pursuant to R18-16-410;
 7. Records of Decision approved by the Director pursuant to R18-16-413; and
 8. Records of Decision approved by the Director pursuant to 40 CFR 300.430(f)(5).

R18-7-203. Remediation Standards

- A. A person subject to this Article shall remediate soil so that any concentration of contaminants remaining in the soil after remediation is less than or equal to one of the following:
1. The background remediation standards prescribed in R18-7-204.
 2. The pre-determined remediation standards prescribed in R18-7-205.
 3. The site-specific remediation standards prescribed in R18-7-206.
- B. A person who conducts a soil remediation based on the standards ~~set forth~~ in R18-7-205, or R18-7-206, or R18-7-207 shall remediate soil so that any concentration of contaminants remaining in the soil after remediation does not:
1. Cause or threaten to cause a violation of Water Quality Standards prescribed in 18 A.A.C. 11. If the remediation level for a contaminant in the soil is not protective of aquifer water quality and surface water quality, the person shall remediate soil to an alternative soil remediation level that is protective of aquifer water quality and surface water quality.
 2. Exhibit a hazardous waste characteristic of ignitability, corrosivity, or reactivity as defined in ~~A.A.C. R18-8-261(A).~~ If the remediation level for a contaminant in the soil results in leaving soils that exhibit a hazardous waste characteristic other than toxicity, the person shall remediate soil to an alternative soil remediation level such that the soil does not exhibit a hazardous waste characteristic other than toxicity.
 3. Cause or threaten to cause an adverse impact to ecological receptors. If the Department determines that the remediation level for a contaminant in soil may impact ecological receptors based on the existence of ecological receptors and complete exposure pathways, the person shall conduct an ecological risk assessment. If the ecological risk assessment indicates that any concentration of contaminants remaining in the soil after remediation causes or threatens to cause an adverse impact to ecological receptors, the person shall remediate soil to an alternative soil remediation level, derived from the ecological risk assessment, that is protective of ecological receptors.
- C. Soil vapor concentration may be used to estimate the total contaminant concentration in soil if the Department determines that the soil vapor concentration methodology will not be invalidated by the soil, hydrogeology, or other characteristics of

the site.

R18-7-204. Background Remediation Standards

- A. A person may elect to remediate to a background concentration for a contaminant.
- B. A person who conducts a remediation to a background concentration for a contaminant shall establish the background concentration using all of the following factors:
 - 1. Site-specific historical information concerning land use.
 - 2. Site-specific sampling of soils unaffected by a release, but having characteristics similar to those of the soils affected by the release.
 - 3. ~~A statistical~~ Statistical analysis of ~~the~~ background concentrations using the 95th percentile upper confidence limit.

R18-7-205. Pre-Determined Remediation Standards

- A. A person may elect to remediate to the residential or non-residential ~~Soil Remediation Levels~~ soil remediation levels (SRLs) set forth in Appendix A. If allowed under R18-7-202(E), a person may also elect to remediate to the residential or non-residential SRLs in Appendix B.
- B. A person who conducts ~~an SRL-based~~ remediation pursuant to this Article shall remediate to the residential SRL on any property where there is residential use at the time remediation is completed.
- C. A pre-determined contaminant standard established by federal law or regulation may be used for polychlorinated biphenyl cleanups regulated pursuant to the Toxic Substances Control Act (TSCA) at 40 CFR 761.120 et seq.; however, the Department has no regulatory authority to issue a Letter of Completion in TSCA-regulated cleanups.
- D. A person who elects to utilize a residential or non-residential SRL for the following known human carcinogens shall remediate to a 1×10^{-6} excess lifetime cancer risk: benzene, benzidine, bis (chloromethyl) ether, chromium VI, diethylstilbestrol, direct black 38, direct blue 6, direct brown 95, nickel subsulfide, and vinyl chloride.
- E. Except as provided below, a person who elects to remediate to a residential SRL may utilize a 1×10^{-5} excess lifetime cancer risk for any carcinogen other than a known human carcinogen. If the current or currently intended future use of the contaminated site is a child care facility or school where children below the age of 18 are reasonably expected to be in frequent, repeated contact with the soil, the person conducting remediation shall remediate to a 1×10^{-6} excess lifetime cancer risk.
- F. For contaminants that exhibit both carcinogenic and non-carcinogenic effects, the numeric standard that is lower (more protective) shall apply.

R18-7-206. Site-Specific Remediation Standards

- A. A person may elect to remediate to a residential or a non-residential site-specific remediation level derived from a site-specific human health risk assessment.
- B. A person who conducts a remediation to a residential or a non-residential site-specific remediation level shall use one of the following site-specific human health risk assessment methodologies:
 - 1. A deterministic methodology. If a deterministic methodology is used, reasonable maximum exposures shall be evaluated for future use scenarios.
 - 2. A probabilistic methodology. If a probabilistic methodology is used, it shall be no less protective than the 95th percentile upper bound estimate of the distribution.
 - 3. An alternative methodology commonly accepted in the scientific community. An alternative methodology is considered accepted in the scientific community if it is published in peer-reviewed literature, such as a professional journal or publication of standards of general circulation, and there is general consensus within the scientific community about that the methodology is sound.
- C. A person who conducts a remediation to a site-specific remediation level shall remediate to the residential site-specific remediation level on any property where there is residential use at the time remediation is completed.
- ~~D. With prior approval of the Department, a person may achieve the site-specific remediation levels based on the use of institutional and engineering controls. The approval shall be based, in part, on the demonstration that the institutional and engineering controls will be maintained.~~
- E.D. A person conducting a remediation to a residential or a non-residential site-specific remediation level shall remediate the contaminants in soil to a Hazard Index no greater than 1 to and a cumulative excess lifetime cancer risk between from 1×10^{-6} and to 1×10^{-4} , and a Hazard Index of no greater than one taking into account the factors enumerated in this subsection. The person conducting a remediation, and the Department prior to issuing a Letter of Completion, shall select the excess lifetime cancer risk between 1×10^{-6} and 1×10^{-4} based upon the following site specific factors: The following site-specific factors shall be evaluated when determining the cumulative excess lifetime cancer risk:
 - 1. The presence of multiple contaminants.
 - 2. The existence of multiple pathways of exposure.
 - 3. The uncertainty of exposure.
 - 4. The sensitivity of the exposed population.
 - 5. Other program-related laws and regulations that may apply.

R18-7-207. ~~Voluntary Environmental Mitigation Use Restriction (VEMUR)~~ Site-specific Remediation Standards for Nitrates and Nitrites

- ~~A.~~ A person who remediates to the non residential SRL, or to the non residential site specific remediation level shall submit the information listed in R18-7-208(A)(1) through (5) and a VEMUR signed by the real property owner, as set forth in Appendix B, to the applicable Departmental program listed in R18-7-202(A) or R18-7-202(B). The VEMUR shall be formatted in accordance with A.R.S. § 11-480 and any other specific requirements of the County Recorder of the jurisdiction.
- ~~B.~~ The applicable Departmental program listed in R18-7-202(A) or R18-7-202(B) shall evaluate the complete information described in R18-7-207(A) and verify whether the non residential SRL or the non residential site specific remediation level has been achieved. An authorized Departmental representative shall either sign the VEMUR submitted pursuant to subsection (A) of this Section and return the signed VEMUR by certified mail, or request additional information to make the verification.
- ~~C.~~ A person described in R18-7-207(A) shall record a VEMUR described in R18-7-207(B) with the County Recorder's office where the property is located within 30 calendar days of receipt of the VEMUR signed by the authorized Departmental representative, as evidenced by the return receipt.
- ~~D.~~ A real property owner who remediates to the background concentration of a contaminant, to the residential SRL, or to the residential site specific remediation level and who wishes to cancel a recorded VEMUR shall submit the information required in R18-7-208(A)(1) through (5) and a signed VEMUR Cancellation, as set forth in Appendix C, to the applicable Departmental program listed in R18-7-202(A) or R18-7-202(B). The VEMUR Cancellation shall be formatted in accordance with A.R.S. § 11-480 and any other specific requirements of the County Recorder of the jurisdiction.
- ~~E.~~ The applicable Departmental program listed in R18-7-202(A) or R18-7-202(B) shall evaluate the complete information described in R18-7-207(D) and verify whether the background concentration, the residential SRL, or the residential site specific remediation level has been achieved. An authorized Departmental representative shall either sign the VEMUR Cancellation submitted pursuant to R18-7-207(D) and return the VEMUR Cancellation via certified mail, or request additional information to make the verification.
- ~~F.~~ A person who records a document described in R18-7-207 shall provide a copy of the recorded document to the applicable Departmental program described in R18-7-202(A) or R18-7-202(B) within 30 calendar days of the date of recording.

A person who conducts remediation of nitrates or nitrites shall remediate to a site-specific remediation level pursuant to R18-7-203(B)(1), (2), and (3).

R18-7-208. Declaration of Environmental Use Restriction (DEUR)

A property owner who elects to leave contamination on a property that exceeds the applicable residential standard for the property under R18-7-205 or R18-7-206, or elects to use an institutional control or an engineering control to meet the requirements of R18-7-205, R18-7-206, or R18-7-207, shall record a DEUR pursuant to A.R.S. § 49-152 and comply with the related provisions of that statute and applicable rules.

~~R18-7-208~~R18-7-209. Letter of Completion or Alternative Closure Document

- ~~A.~~ If a person requests a Letter of Completion or an alternative closure document, a person shall submit, at a minimum, the following information to the applicable Departmental program listed in R18-7-202(A) or described in R18-7-202(B):
 1. A description of the actual activities, techniques, and technologies used to remediate soil at the site, including the legal mechanism in place to ensure that any institutional and engineering controls are maintained.
 2. Documentation that requirements prescribed in R18-7-203(A) and R18-7-203(B)(1) and (2) have been satisfied.
 3. If the Department determines pursuant to R18-7-203(B)(3) that an ecological risk assessment is required, documentation that the requirements prescribed in R18-7-203(B)(3) have been satisfied.
 4. Soil sampling analytical results ~~which that~~ are representative of the area ~~which has been~~ remediated, including documentation that the laboratory analysis of samples has been performed by a laboratory licensed by the Arizona Department of Health Services under A.R.S. § 36-495 et seq. and 9 A.A.C. 14, Article 6.
 5. A statement signed by the person conducting the remediation certifying the following: I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.
- ~~B.~~ The applicable Departmental program described in R18-7-202(A) or R18-7-202(B) shall evaluate the information described in ~~R18-7-208(A)~~ R18-7-209(A), ~~and R18-7-207(F) to verify~~ The Department may request additional information, or if the Department verifies compliance with the soil remediation standards set forth under this Article and closure requirements of the applicable program or programs identified in R18-7-202(A) or described in R18-7-202(B), the Department shall issue a Letter of Completion or request additional information, or an alternative closure document provided for by statute or rule that certifies the soil standards in this Article have been achieved.
- ~~C.~~ The applicable Departmental program ~~listed in~~ described in R18-7-202(A) or R18-7-202(B) may revoke or amend any Letter of Completion or alternative closure document described in R18-7-209(B) if any of the information submitted pursuant to R18-7-208(A) or R18-7-209(A) ~~and R18-7-207(F)~~ is inaccurate or if any condition was unknown to the Department when the Department issued the Letter of Completion or alternative closure document.

Notices of Final Rulemaking

~~R18-7-209~~ R18-7-210. Notice of Remediation and Repository

- A. A person conducting soil remediation shall submit a Notice of Remediation to the applicable Departmental program listed in R18-7-202(A) or R18-7-202(B) ~~prior to~~ before beginning remediation. A person conducting a soil remediation to address an immediate and substantial endangerment to public health or the environment and during an emergency who has notified the Department in accordance with ~~emergency~~ notification requirements prescribed in A.R.S. § 49-284 is not required to submit a Notice of Remediation before beginning remediation. Any person who continues ~~or initiates~~ a soil remediation after the immediate and substantial endangerment has been abated ~~initial emergency response~~ shall submit a Notice of Remediation. A Notice of Remediation shall include all of the following information:
1. The name and address of the real property owner;
 2. The name and address of the remediating party;
 3. A legal description and street address of the property;
 4. A list of each contaminant to be remediated;
 5. The background concentration, SRL, or site-specific remediation level selected to meet the remediation standards;
 6. A description of the current and post-remediation property use as either residential or non-residential;
 7. The rationale for the selection of residential or non-residential remediation; and
 8. The proposed technologies for remediating the site.
- B. The Department shall ~~establish and~~ maintain a repository available to the public for information regarding sites where soil is remediated. The Repository shall include a listing of sites for which a Notice of Remediation has been submitted or a Letter of Completion or alternative closure document has been issued.
1. For sites where a Notice of Remediation has been filed, the Repository shall contain the date the notice was filed and the information submitted as described in ~~R18-7-209(A)~~ subsection (A).
 2. For sites where a Letter of Completion or alternative closure document has been issued, the Repository shall contain the following:
 - a. The name and address of the real property owner;
 - b. The name and address of the remediating party.
 - c. A legal description and street address of the property;
 - d. A listing of each contaminant that was remediated;
 - e. The background concentration, SRL, or site-specific remediation level selected to meet the remediation standard;
 - f. A description whether the residential or non-residential standard was achieved;
 - g. A description of any engineering or institutional control used to remediate the site; and
 - h. The date when the Letter of Completion or alternative closure document was issued.
 3. ~~The Repository will be available for public review during the Department's normal business hours. A person who wishes to obtain copies of the Repository shall pay a copying fee established by the Department.~~

Appendix A. Soil Remediation Levels (SRLs)

<u>CONTAMINANT</u>	<u>CASRN</u>	<u>Class</u>	<u>Residential (mg/kg)</u>			<u>Non-residential (mg/kg)</u>
			<u>Carcinogen</u>		<u>Non-carcinogen</u>	
			<u>10⁻⁶ Risk</u>	<u>10⁻⁵ Risk</u>		
<u>Acephate</u>	<u>30560-19-1</u>	<u>ca. nc</u>	<u>63</u>	<u>630</u>	<u>240</u>	<u>2,000</u>
<u>Acetaldehyde</u>	<u>75-07-0</u>	<u>ca. nc</u>	<u>11</u>	<u>110</u>	<u>50</u>	<u>160</u>
<u>Acetochlor</u>	<u>34256-82-1</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>Acetone</u>	<u>67-64-1</u>	<u>nc</u>			<u>14,000</u>	<u>54,000</u>
<u>Acetone cyanohydrin</u>	<u>75-86-5</u>	<u>nc</u>			<u>49</u>	<u>490</u>
<u>Acetonitrile</u>	<u>75-05-8</u>	<u>nc</u>			<u>420</u>	<u>1,800</u>
<u>Acrolein</u>	<u>107-02-8</u>	<u>nc</u>			<u>0.10</u>	<u>0.34</u>
<u>Acrylamide</u>	<u>79-06-1</u>	<u>ca. nc</u>	<u>0.12</u>	<u>1.2</u>		<u>3.8</u>
<u>Acrylic acid</u>	<u>79-10-7</u>	<u>nc</u>			<u>29,000</u>	<u>270,000</u>
<u>Acrylonitrile</u>	<u>107-13-1</u>	<u>ca. nc</u>	<u>0.21</u>	<u>2.1</u>		<u>4.9</u>
<u>Alachlor</u>	<u>15972-60-8</u>	<u>ca. nc</u>	<u>6.8</u>	<u>68</u>		<u>210</u>
<u>Alar</u>	<u>1596-84-5</u>	<u>nc</u>			<u>9,200</u>	<u>92,000</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>Aldicarb</u>	<u>116-06-3</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>Aldicarb sulfone</u>	<u>1646-88-4</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>Aldrin</u>	<u>309-00-2</u>	<u>ca. nc</u>	<u>0.032</u>	<u>0.32</u>		<u>1.0</u>
<u>Ally</u>	<u>74223-64-6</u>	<u>nc</u>			<u>15,000</u>	<u>150,000</u>
<u>Allyl alcohol</u>	<u>107-18-6</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Allyl chloride</u>	<u>107-05-1</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>Aluminum</u>	<u>7429-90-5</u>	<u>nc</u>			<u>76,000</u>	<u>920,000</u>
<u>Aluminum phosphide</u>	<u>20859-73-8</u>	<u>nc</u>			<u>31</u>	<u>410</u>
<u>Amdro</u>	<u>67485-29-4</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>Ametryn</u>	<u>834-12-8</u>	<u>nc</u>			<u>550</u>	<u>5,500</u>
<u>Aminodinitrotoluene</u>	<u>1321-12-6</u>	<u>nc</u>			<u>12</u>	<u>120</u>
<u>m-Aminophenol</u>	<u>591-27-5</u>	<u>nc</u>			<u>4,300</u>	<u>43,000</u>
<u>4-Aminopyridine</u>	<u>504-24-5</u>	<u>nc</u>			<u>1.2</u>	<u>12</u>
<u>Amitraz</u>	<u>33089-61-1</u>	<u>nc</u>			<u>150</u>	<u>1,500</u>
<u>Ammonium sulfamate</u>	<u>7773-06-0</u>	<u>nc</u>			<u>12,000</u>	<u>120,000</u>
<u>Aniline</u>	<u>62-53-3</u>	<u>ca. nc</u>	<u>96</u>	<u>960</u>	<u>430</u>	<u>3,000</u>
<u>Antimony and compounds</u>	<u>7440-36-0</u>	<u>nc</u>			<u>31</u>	<u>410</u>
<u>Apollo</u>	<u>74115-24-5</u>	<u>nc</u>			<u>790</u>	<u>8,000</u>
<u>Aramite</u>	<u>140-57-8</u>	<u>ca. nc</u>	<u>22</u>	<u>220</u>		<u>690</u>
<u>Arsenic¹</u>	<u>7440-38-2</u>	<u>ca. nc</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
<u>Assure</u>	<u>76578-12-6</u>	<u>nc</u>			<u>550</u>	<u>5,500</u>
<u>Asulam</u>	<u>3337-71-1</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>Atrazine</u>	<u>1912-24-9</u>	<u>ca. nc</u>	<u>2.5</u>	<u>25</u>		<u>78</u>
<u>Avermectin B1</u>	<u>71751-41-2</u>	<u>nc</u>			<u>24</u>	<u>250</u>
<u>Azobenzene</u>	<u>103-33-3</u>	<u>ca</u>	<u>5.0</u>	<u>50</u>		<u>160</u>
<u>Barium and compounds</u>	<u>7440-39-3</u>	<u>nc</u>			<u>15,000</u>	<u>170,000</u>
<u>Baygon</u>	<u>114-26-1</u>	<u>nc</u>			<u>240</u>	<u>2,500</u>
<u>Bayleton</u>	<u>43121-43-3</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>Baythroid</u>	<u>68359-37-5</u>	<u>nc</u>			<u>1,500</u>	<u>15,000</u>
<u>Benefin</u>	<u>1861-40-1</u>	<u>nc</u>			<u>18,000</u>	<u>180,000</u>
<u>Benomyl</u>	<u>17804-35-2</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>Bentazon</u>	<u>25057-89-0</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>Benzaldehyde</u>	<u>100-52-7</u>	<u>nc</u>			<u>6,100</u>	<u>62,000</u>
<u>Benzene</u>	<u>71-43-2</u>	<u>ca. nc</u>	<u>0.65</u>	<u>NA</u>		<u>1.4</u>
<u>Benzidine</u>	<u>92-87-5</u>	<u>ca. nc</u>	<u>0.0024</u>	<u>NA</u>		<u>0.0075</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)		Non-residential (mg/kg)	
			Carcinogen			
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>Benzoic acid</u>	<u>65-85-0</u>	<u>nc</u>			<u>240,000</u>	<u>1,000,000 **</u>
<u>Benzotrithloride</u>	<u>98-07-7</u>	<u>ca</u>	<u>0.042</u>	<u>0.42</u>		<u>1.3</u>
<u>Benzyl alcohol</u>	<u>100-51-6</u>	<u>nc</u>			<u>18,000</u>	<u>180,000</u>
<u>Benzyl chloride</u>	<u>100-44-7</u>	<u>ca, nc</u>	<u>0.92</u>	<u>9.2</u>		<u>22</u>
<u>Beryllium and compounds</u>	<u>7440-41-7</u>	<u>ca, nc</u>			<u>150</u>	<u>1,900</u>
<u>Bidrin</u>	<u>141-66-2</u>	<u>nc</u>			<u>6.1</u>	<u>62</u>
<u>Biphenthrin (Talstar)</u>	<u>82657-04-3</u>	<u>nc</u>			<u>920</u>	<u>9,200</u>
<u>1,1-Biphenyl</u>	<u>92-52-4</u>	<u>nc</u>			<u>350 *</u>	<u>350 *</u>
<u>Bis(2-chloroethyl)ether</u>	<u>111-44-4</u>	<u>ca</u>	<u>0.23</u>	<u>2.3</u>		<u>5.8</u>
<u>Bis(2-chloroisopropyl)ether</u>	<u>39638-32-9</u>	<u>nc</u>			<u>790 *</u>	<u>790 *</u>
<u>Bis(chloromethyl)ether</u>	<u>542-88-1</u>	<u>ca</u>	<u>0.00020</u>	<u>NA</u>		<u>0.00043</u>
<u>Bis(2-chloro-1-methylethyl)ether</u>	<u>108-60-1</u>	<u>ca, nc</u>	<u>3.0</u>	<u>30</u>		<u>74</u>
<u>Bis(2-ethylhexyl)phthalate (DEHP)</u>	<u>117-81-7</u>	<u>ca, nc</u>	<u>39</u>	<u>390</u>		<u>1200</u>
<u>Bisphenol A</u>	<u>80-05-7</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>Boron</u>	<u>7440-42-8</u>	<u>nc</u>			<u>16,000</u>	<u>200,000</u>
<u>Bromate</u>	<u>15541-45-4</u>	<u>ca, nc</u>	<u>0.78</u>	<u>7.8</u>		<u>25</u>
<u>Bromobenzene</u>	<u>108-86-1</u>	<u>nc</u>			<u>28</u>	<u>92</u>
<u>Bromodichloromethane</u>	<u>75-27-4</u>	<u>ca, nc</u>	<u>0.83</u>	<u>8.3</u>		<u>18</u>
<u>Bromoform (tribromomethane)</u>	<u>75-25-2</u>	<u>ca, nc</u>	<u>69</u>	<u>690</u>		<u>2,200</u>
<u>Bromomethane (methyl bromide)</u>	<u>74-83-9</u>	<u>nc</u>			<u>3.9</u>	<u>13</u>
<u>Bromophos</u>	<u>2104-96-3</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Bromoxynil</u>	<u>1689-84-5</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>Bromoxynil octanoate</u>	<u>1689-99-2</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>1,3-Butadiene</u>	<u>106-99-0</u>	<u>ca, nc</u>	<u>0.058</u>	<u>0.58</u>		<u>1.2</u>
<u>1-Butanol</u>	<u>71-36-3</u>	<u>nc</u>			<u>6,100</u>	<u>61,000</u>
<u>Butylate</u>	<u>2008-41-5</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>n-Butylbenzene</u>	<u>104-51-8</u>	<u>nc</u>			<u>240 *</u>	<u>240 *</u>
<u>sec-Butylbenzene</u>	<u>135-98-8</u>	<u>nc</u>			<u>220 *</u>	<u>220 *</u>
<u>tert-Butylbenzene</u>	<u>98-06-6</u>	<u>nc</u>			<u>390 *</u>	<u>390 *</u>
<u>Butyl benzyl phthalate</u>	<u>85-68-7</u>	<u>nc</u>			<u>12,000</u>	<u>120,000</u>
<u>Butylphthalyl butylglycolate</u>	<u>85-70-1</u>	<u>nc</u>			<u>61,000</u>	<u>620,000</u>
<u>Cadmium and compounds</u>	<u>7440-43-9</u>	<u>ca, nc</u>			<u>39</u>	<u>510</u>
<u>Caprolactam</u>	<u>105-60-2</u>	<u>nc</u>			<u>31,000</u>	<u>310,000</u>
<u>Captafol</u>	<u>2425-06-1</u>	<u>ca, nc</u>	<u>64</u>	<u>640</u>	<u>120</u>	<u>1,200</u>
<u>Captan</u>	<u>133-06-2</u>	<u>ca, nc</u>	<u>160</u>	<u>1,600</u>		<u>4,900</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
Carbaryl	<u>63-25-2</u>	nc			<u>6,100</u>	<u>62,000</u>
Carbazole	<u>86-74-8</u>	ca	<u>27</u>	<u>270</u>		<u>860</u>
Carbofuran	<u>1563-66-2</u>	nc			<u>310</u>	<u>3,100</u>
Carbon disulfide	<u>75-15-0</u>	nc			<u>360</u>	<u>720 *</u>
Carbon tetrachloride	<u>56-23-5</u>	ca, nc	<u>0.25</u>	<u>2.5</u>	<u>2.2</u>	<u>5.5</u>
Carbosulfan	<u>55285-14-8</u>	nc			<u>610</u>	<u>6,200</u>
Carboxin	<u>5234-68-4</u>	nc			<u>6,100</u>	<u>62,000</u>
Chloral hydrate	<u>302-17-0</u>	nc			<u>6,100</u>	<u>62,000</u>
Chloramben	<u>133-90-4</u>	nc			<u>920</u>	<u>9,200</u>
Chloranil	<u>118-75-2</u>	ca	<u>1.4</u>	<u>14</u>		<u>43</u>
Chlordane	<u>12789-03-6</u>	ca, nc	<u>1.9</u>	<u>19</u>		<u>65</u>
Chlorimuron-ethyl	<u>90982-32-4</u>	nc			<u>1,200</u>	<u>12,000</u>
Chloroacetic acid	<u>79-11-8</u>	nc			<u>120</u>	<u>1,200</u>
2-Chloroacetophenone	<u>532-27-4</u>	nc			<u>0.033</u>	<u>0.11</u>
4-Chloroaniline	<u>106-47-8</u>	nc			<u>240</u>	<u>2,500</u>
Chlorobenzene	<u>108-90-7</u>	nc			<u>150</u>	<u>530</u>
Chlorobenzilate	<u>510-15-6</u>	ca, nc	<u>2.0</u>	<u>20</u>		<u>64</u>
p-Chlorobenzoic acid	<u>74-11-3</u>	nc			<u>12,000</u>	<u>120,000</u>
4-Chlorobenzotrifluoride	<u>98-56-6</u>	nc			<u>1,200</u>	<u>12,000</u>
2-Chloro-1,3-butadiene	<u>126-99-8</u>	nc			<u>3.6</u>	<u>12</u>
1-Chlorobutane	<u>109-69-3</u>	nc			<u>480 *</u>	<u>480 *</u>
1-Chloro-1,1-difluoroethane	<u>75-68-3</u>	nc			<u>340 *</u>	<u>340 *</u>
Chlorodifluoromethane	<u>75-45-6</u>	nc			<u>340 *</u>	<u>340 *</u>
Chloroethane	<u>75-00-3</u>	ca, nc	<u>3.0</u>	<u>30</u>		<u>65</u>
Chloroform	<u>67-66-3</u>	ca, nc	<u>0.94</u>	<u>9.4</u>		<u>20</u>
Chloromethane	<u>74-87-3</u>	nc			<u>48</u>	<u>160</u>
4-Chloro-2-methylaniline	<u>95-69-2</u>	ca	<u>0.94</u>	<u>9.4</u>		<u>30</u>
4-Chloro-2-methylaniline hydrochloride	<u>3165-93-3</u>	ca	<u>1.2</u>	<u>12</u>		<u>37</u>
beta-Chloronaphthalene	<u>91-58-7</u>	nc			<u>110 *</u>	<u>110 *</u>
o-Chloronitrobenzene	<u>88-73-3</u>	ca, nc			<u>1.4</u>	<u>4.5</u>
p-Chloronitrobenzene	<u>100-00-5</u>	ca, nc			<u>10</u>	<u>37</u>
2-Chlorophenol	<u>95-57-8</u>	nc			<u>63</u>	<u>240</u>
2-Chloropropane	<u>75-29-6</u>	nc			<u>170</u>	<u>590</u>
Chlorothalonil	<u>1897-45-6</u>	ca, nc	<u>50</u>	<u>500</u>		<u>1600</u>
o-Chlorotoluene	<u>95-49-8</u>	nc			<u>160</u>	<u>510 *</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>Chlorpropham</u>	<u>101-21-3</u>	<u>nc</u>			<u>12,000</u>	<u>120,000</u>
<u>Chlorpyrifos</u>	<u>2921-88-2</u>	<u>nc</u>			<u>180</u>	<u>1,800</u>
<u>Chlorpyrifos-methyl</u>	<u>5598-13-0</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>Chlorsulfuron</u>	<u>64902-72-3</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>Chlorthiophos</u>	<u>60238-56-4</u>	<u>nc</u>			<u>49</u>	<u>490</u>
<u>Chromium III</u>	<u>16065-83-1</u>	<u>nc</u>			<u>120,000</u>	<u>1,000,000 **</u>
Chromium VI	<u>18540-29-9</u>	<u>ca, nc</u>	<u>30</u>	<u>NA</u>		<u>65</u>
<u>Cobalt</u>	<u>7440-48-4</u>	<u>ca, nc</u>	<u>900</u>	<u>9,000</u>	<u>1,400</u>	<u>13,000</u>
<u>Copper and compounds</u>	<u>7440-50-8</u>	<u>nc</u>			<u>3,100</u>	<u>41,000</u>
<u>Crotonaldehyde</u>	<u>123-73-9</u>	<u>ca</u>	<u>0.0053</u>	<u>0.053</u>		<u>0.11</u>
<u>Cumene (isopropylbenzene)</u>	<u>98-82-8</u>	<u>nc</u>			<u>92 *</u>	<u>92 *</u>
<u>Cyanazine</u>	<u>21725-46-2</u>	<u>ca, nc</u>	<u>0.65</u>	<u>6.5</u>		<u>21</u>
<u>Cyanide (free)²</u>	<u>57-12-5</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>Cyanide (hydrogen)³</u>	<u>74-90-8</u>	<u>nc</u>			<u>11</u>	<u>35</u>
<u>Cyanogen</u>	<u>460-19-5</u>	<u>nc</u>			<u>130</u>	<u>430</u>
<u>Cyanogen bromide</u>	<u>506-68-3</u>	<u>nc</u>			<u>290</u>	<u>970</u>
<u>Cyanogen chloride</u>	<u>506-77-4</u>	<u>nc</u>			<u>160</u>	<u>540</u>
<u>Cyclohexane</u>	<u>110-82-7</u>	<u>nc</u>			<u>140 *</u>	<u>140 *</u>
<u>Cyclohexanone</u>	<u>108-94-1</u>	<u>nc</u>			<u>310,000</u>	<u>1,000,000 **</u>
<u>Cyclohexylamine</u>	<u>108-91-8</u>	<u>nc</u>			<u>12,000</u>	<u>120,000</u>
<u>Cyhalothrin/Karate</u>	<u>68085-85-8</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Cypermethrin</u>	<u>52315-07-8</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>Cyromazine</u>	<u>66215-27-8</u>	<u>nc</u>			<u>460</u>	<u>4,600</u>
<u>Dacthal</u>	<u>1861-32-1</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>Dalapon</u>	<u>75-99-0</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>Danitol</u>	<u>39515-41-8</u>	<u>nc</u>			<u>1,500</u>	<u>15,000</u>
<u>DDD</u>	<u>72-54-8</u>	<u>ca</u>	<u>2.8</u>	<u>28</u>		<u>100</u>
<u>DDE</u>	<u>72-55-9</u>	<u>ca</u>	<u>2.0</u>	<u>20</u>		<u>70</u>
<u>DDT</u>	<u>50-29-3</u>	<u>ca, nc</u>	<u>2.0</u>	<u>20</u>		<u>70</u>
<u>Decabromodiphenyl ether</u>	<u>1163-19-5</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>Demeton</u>	<u>8065-48-3</u>	<u>nc</u>			<u>2.4</u>	<u>25</u>
<u>Diallate</u>	<u>2303-16-4</u>	<u>ca</u>	<u>9.0</u>	<u>90</u>		<u>280</u>
<u>Diazinon</u>	<u>333-41-5</u>	<u>nc</u>			<u>55</u>	<u>550</u>
<u>Dibenzofuran</u>	<u>132-64-9</u>	<u>nc</u>			<u>140 *</u>	<u>140 *</u>
<u>1,4-Dibromobenzene</u>	<u>106-37-6</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>

Arizona Administrative Register / Secretary of State
Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
Dibromochloromethane	<u>124-48-1</u>	ca. nc	<u>1.1</u>	<u>11</u>		<u>26</u>
1,2-Dibromo-3-chloropropane	<u>96-12-8</u>	ca. nc	<u>0.53</u>	<u>5.3</u>	<u>1.5</u>	<u>6.5</u>
1,2-Dibromoethane	<u>106-93-4</u>	ca. nc	<u>0.029</u>	<u>0.29</u>		<u>0.63</u>
Dibutyl phthalate	<u>84-74-2</u>	nc			<u>6,100</u>	<u>62,000</u>
Dicamba	<u>1918-00-9</u>	nc			<u>1,800</u>	<u>18,000</u>
1,2-Dichlorobenzene	<u>95-50-1</u>	nc			<u>600 *</u>	<u>600 *</u>
1,3-Dichlorobenzene	<u>541-73-1</u>	nc			<u>530</u>	<u>600 *</u>
1,4-Dichlorobenzene	<u>106-46-7</u>	ca. nc	<u>3.5</u>	<u>35</u>		<u>79</u>
3,3-Dichlorobenzidine	<u>91-94-1</u>	ca	<u>1.2</u>	<u>12</u>		<u>38</u>
4,4'-Dichlorobenzophenone	<u>90-98-2</u>	nc			<u>1,800</u>	<u>18,000</u>
1,4-Dichloro-2-butene	<u>764-41-0</u>	ca	<u>0.0080</u>	<u>0.080</u>		<u>0.18</u>
Dichlorodifluoromethane	<u>75-71-8</u>	nc			<u>94</u>	<u>310</u>
1,1-Dichloroethane	<u>75-34-3</u>	nc			<u>510</u>	<u>1,700 *</u>
1,2-Dichloroethane (DCA)	<u>107-06-2</u>	ca. nc	<u>0.28</u>	<u>2.8</u>		<u>6.0</u>
1,1-Dichloroethylene (DCE)	<u>75-35-4</u>	nc			<u>120</u>	<u>410</u>
1,2-Dichloroethylene (cis)	<u>156-59-2</u>	nc			<u>43</u>	<u>150</u>
1,2-Dichloroethylene (trans)	<u>156-60-5</u>	nc			<u>69</u>	<u>230</u>
2,4-Dichlorophenol	<u>120-83-2</u>	nc			<u>180</u>	<u>1,800</u>
4-(2,4-Dichlorophenoxy)butyric acid	<u>94-82-6</u>	nc			<u>490</u>	<u>4,900</u>
2,4-Dichlorophenoxyacetic Acid (2,4-D)	<u>94-75-7</u>	nc			<u>690</u>	<u>7,700</u>
1,2-Dichloropropane	<u>78-87-5</u>	ca. nc	<u>0.34</u>	<u>3.4</u>		<u>7.4</u>
1,3-Dichloropropane	<u>142-28-9</u>	nc			<u>100</u>	<u>360</u>
1,3-Dichloropropene	<u>542-75-6</u>	ca. nc	<u>0.79</u>	<u>7.9</u>		<u>18</u>
2,3-Dichloropropanol	<u>616-23-9</u>	nc			<u>180</u>	<u>1,800</u>
Dichlorvos	<u>62-73-7</u>	ca. nc	<u>1.9</u>	<u>19</u>		<u>59</u>
Dicofol	<u>115-32-2</u>	ca	<u>1.2</u>	<u>12</u>		<u>39</u>
Dicyclopentadiene	<u>77-73-6</u>	nc			<u>0.54</u>	<u>1.8</u>
Dieldrin	<u>60-57-1</u>	ca. nc	<u>0.034</u>	<u>0.34</u>		<u>1.1</u>
Diethylene glycol, monobutyl ether	<u>112-34-5</u>	nc			<u>610</u>	<u>6,200</u>
Diethylene glycol, monomethyl ether	<u>111-90-0</u>	nc			<u>3,700</u>	<u>37,000</u>
Diethylformamide	<u>617-84-5</u>	nc			<u>24</u>	<u>250</u>
Di(2-ethylhexyl)adipate	<u>103-23-1</u>	ca. nc	<u>460</u>	<u>4,600</u>		<u>14,000</u>
Diethyl phthalate	<u>84-66-2</u>	nc			<u>49,000</u>	<u>490,000</u>
Diethylstilbestrol	<u>56-53-1</u>	ca	<u>0.00012</u>	<u>NA</u>		<u>0.0037</u>
Difenzoquat (Avenge)	<u>43222-48-6</u>	nc			<u>4,900</u>	<u>49,000</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
Diflubenzuron	<u>35367-38-5</u>	nc			1,200	12,000
Diisononyl phthalate	<u>28553-12-0</u>	nc			1,200	12,000
Diisopropyl methylphosphonate	<u>1445-75-6</u>	nc			4,900	49,000
Dimethipin	<u>55290-64-7</u>	nc			1,200	12,000
Dimethoate	<u>60-51-5</u>	nc			12	120
3,3'-Dimethoxybenzidine	<u>119-90-4</u>	ca	39	390		1,200
Dimethylamine	<u>124-40-3</u>	nc			0.067	0.25
N-N-Dimethylaniline	<u>121-69-7</u>	nc			120	1,200
2,4-Dimethylaniline	<u>95-68-1</u>	ca	0.73	7.3		23
2,4-Dimethylaniline hydrochloride	<u>21436-96-4</u>	ca	0.94	9.4		30
3,3'-Dimethylbenzidine	<u>119-93-7</u>	ca	0.24	2.4		7.5
N,N-Dimethylformamide	<u>68-12-2</u>	nc			6,100	62,000
Dimethylphenethylamine	<u>122-09-8</u>	nc			61	620
2,4-Dimethylphenol	<u>105-67-9</u>	nc			1,200	12,000
2,6-Dimethylphenol	<u>576-26-1</u>	nc			37	370
3,4-Dimethylphenol	<u>95-65-8</u>	nc			61	620
Dimethyl phthalate	<u>131-11-3</u>	nc			610,000	1,000,000 **
Dimethyl terephthalate	<u>120-61-6</u>	nc			6,100	62,000
4,6-Dinitro-o-cyclohexyl phenol	<u>131-89-5</u>	nc			120	1,200
1,2-Dinitrobenzene	<u>528-29-0</u>	nc			6.1	62
1,3-Dinitrobenzene	<u>99-65-0</u>	nc			6.1	62
1,4-Dinitrobenzene	<u>100-25-4</u>	nc			6.1	62
2,4-Dinitrophenol	<u>51-28-5</u>	nc			120	1,200
Dinitrotoluene mixture	<u>25321-14-6</u>	ca	0.81	8.1		25
2,4-Dinitrotoluene	<u>121-14-2</u>	nc			120	1,200
2,6-Dinitrotoluene	<u>606-20-2</u>	nc			61	620
Dinoseb	<u>88-85-7</u>	nc			61	620
di-n-Octyl phthalate	<u>117-84-0</u>	nc			2,400	25,000
1,4-Dioxane	<u>123-91-1</u>	ca	50	500		1,600
Dioxin (2,3,7,8-TCDD)	<u>1746-01-6</u>	ca	0.0000045	0.000045		0.00016
Diphenamid	<u>957-51-7</u>	nc			1,800	18,000
Diphenylamine	<u>122-39-4</u>	nc			1,500	15,000
N,N-Diphenyl-1,4 benzenediamine (DPPD)	<u>74-31-7</u>	nc			18	180
1,2-Diphenylhydrazine	<u>122-66-7</u>	ca	0.68	6.8		22
Diphenyl sulfone	<u>127-63-9</u>	nc			180	1,800

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
Diquat	85-00-7	nc			130	1,400
Direct black 38	1937-37-7	ca	0.064	NA		0.20
Direct blue 6	2602-46-2	ca	0.068	NA		0.21
Direct brown 95	16071-86-6	ca	0.059	NA		0.19
Disulfoton	298-04-4	nc			2.4	25
1,4-Dithiane	505-29-3	nc			610	6,200
Diuron	330-54-1	nc			120	1,200
Dodine	2439-10-3	nc			240	2,500
Dysprosium	7429-91-6	nc			7,800	102,000
Endosulfan	115-29-7	nc			370	3,700
Endothall	145-73-3	nc			1,200	12,000
Endrin	72-20-8	nc			18	180
Epichlorohydrin	106-89-8	ca, nc			7.6	26
1,2-Epoxybutane	106-88-7	nc			350	3,500
EPTC (S-Ethyl dipropylthiocarbamate)	759-94-4	nc			1,500	15,000
Ethephon (2-chloroethyl phosphonic acid)	16672-87-0	nc			310	3,100
Ethion	563-12-2	nc			31	310
2-Ethoxyethanol	110-80-5	nc			24,000	250,000
2-Ethoxyethanol acetate	111-15-9	nc			18,000	180,000
Ethyl acetate	141-78-6	nc			19,000	37,000 *
Ethyl acrylate	140-88-5	ca	0.21	2.1		4.5
Ethylbenzene	100-41-4	nc			400 *	400 *
Ethyl chloride	75-00-3	ca, nc	3.0	30		65
Ethylene cyanohydrin	109-78-4	nc			18,000	180,000
Ethylene diamine	107-15-3	nc			5,500	55,000
Ethylene glycol	107-21-1	nc			120,000	1,000,000 **
Ethylene glycol, monobutyl ether	111-76-2	nc			31,000	310,000
Ethylene oxide	75-21-8	ca	0.14	1.4		3.4
Ethylene thiourea (ETU)	96-45-7	ca, nc			4.9	49
Ethyl ether	60-29-7	nc			1,800 *	1,800 *
Ethyl methacrylate	97-63-2	nc			140 *	140 *
Ethyl p-nitrophenyl phenylphosphorothioate	2104-64-5	nc			0.61	6.2
Ethylphthalyl ethyl glycolate	84-72-0	nc			180,000	1,000,000 **
Express	101200-48-0	nc			490	4,900
Fenamiphos	22224-92-6	nc			15	150

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>Fluometuron</u>	<u>2164-17-2</u>	<u>nc</u>			<u>790</u>	<u>8,000</u>
<u>Fluoride</u>	<u>16984-48-8</u>	<u>nc</u>			<u>3,700</u>	<u>37,000</u>
<u>Fluoridone</u>	<u>59756-60-4</u>	<u>nc</u>			<u>4,900</u>	<u>49,000</u>
<u>Flurprimidol</u>	<u>56425-91-3</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>Flutolanil</u>	<u>66332-96-5</u>	<u>nc</u>			<u>3,700</u>	<u>37,000</u>
<u>Fluvalinate</u>	<u>69409-94-5</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>Folpet</u>	<u>133-07-3</u>	<u>ca, nc</u>	<u>160</u>	<u>1,600</u>		<u>4,900</u>
<u>Fomesafen</u>	<u>72178-02-0</u>	<u>ca</u>	<u>2.9</u>	<u>29</u>		<u>91</u>
<u>Fonofos</u>	<u>944-22-9</u>	<u>nc</u>			<u>120</u>	<u>1,200</u>
<u>Formaldehyde</u>	<u>50-00-0</u>	<u>ca, nc</u>			<u>9,200</u>	<u>92,000</u>
<u>Formic Acid</u>	<u>64-18-6</u>	<u>nc</u>			<u>110,000</u>	<u>1,000,000 **</u>
<u>Fosetyl-al</u>	<u>39148-24-8</u>	<u>nc</u>			<u>180,000</u>	<u>1,000,000 **</u>
<u>Furan</u>	<u>110-00-9</u>	<u>nc</u>			<u>2.5</u>	<u>8.5</u>
<u>Furazolidone</u>	<u>67-45-8</u>	<u>ca</u>	<u>0.14</u>	<u>1.4</u>		<u>4.5</u>
<u>Furfural</u>	<u>98-01-1</u>	<u>nc</u>			<u>180</u>	<u>1,800</u>
<u>Furium</u>	<u>531-82-8</u>	<u>ca</u>	<u>0.011</u>	<u>0.11</u>		<u>0.34</u>
<u>Furmecyclox</u>	<u>60568-05-0</u>	<u>ca</u>	<u>18</u>	<u>180</u>		<u>570</u>
<u>Glufosinate-ammonium</u>	<u>77182-82-2</u>	<u>nc</u>			<u>24</u>	<u>250</u>
<u>Glycidaldehyde</u>	<u>765-34-4</u>	<u>nc</u>			<u>24</u>	<u>250</u>
<u>Glyphosate</u>	<u>1071-83-6</u>	<u>nc</u>			<u>6,100</u>	<u>62,000</u>
<u>Haloxypop-methyl</u>	<u>69806-40-2</u>	<u>nc</u>			<u>3.1</u>	<u>31</u>
<u>Harmony</u>	<u>79277-27-3</u>	<u>nc</u>			<u>790</u>	<u>8,003</u>
<u>Heptachlor</u>	<u>76-44-8</u>	<u>ca, nc</u>	<u>0.12</u>	<u>1.2</u>		<u>3.8</u>
<u>Heptachlor epoxide</u>	<u>1024-57-3</u>	<u>ca, nc</u>	<u>0.060</u>	<u>0.60</u>		<u>1.9</u>
<u>Hexabromobenzene</u>	<u>87-82-1</u>	<u>nc</u>			<u>120</u>	<u>1,200</u>
<u>Hexachlorobenzene</u>	<u>118-74-1</u>	<u>ca, nc</u>	<u>0.34</u>	<u>3.4</u>		<u>11</u>
<u>Hexachlorobutadiene</u>	<u>87-68-3</u>	<u>ca, nc</u>	<u>7.0</u>	<u>70</u>	<u>18</u>	<u>180</u>
<u>HCH (alpha)</u>	<u>319-84-6</u>	<u>ca, nc</u>	<u>0.10</u>	<u>1.0</u>		<u>3.6</u>
<u>HCH (beta)</u>	<u>319-85-7</u>	<u>ca, nc</u>	<u>0.36</u>	<u>3.6</u>		<u>13</u>
<u>HCH (gamma) Lindane</u>	<u>58-89-9</u>	<u>ca, nc</u>	<u>0.50</u>	<u>5.0</u>		<u>17</u>
<u>HCH-technical</u>	<u>608-73-1</u>	<u>ca</u>	<u>0.36</u>	<u>3.6</u>		<u>13</u>
<u>Hexachlorocyclopentadiene</u>	<u>77-47-4</u>	<u>nc</u>			<u>370</u>	<u>3,700</u>
<u>Hexachloroethane</u>	<u>67-72-1</u>	<u>ca, nc</u>	<u>39</u>	<u>390</u>	<u>61</u>	<u>620</u>
<u>Hexachlorophene</u>	<u>70-30-4</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>Hexahydro-1,3,5-trinitro-1,3,5-triazine</u>	<u>121-82-4</u>	<u>ca, nc</u>	<u>5.0</u>	<u>50</u>		<u>160</u>

Arizona Administrative Register / Secretary of State
Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>1,6-Hexamethylene diisocyanate</u>	<u>822-06-0</u>	<u>nc</u>			<u>0.17</u>	<u>1.8</u>
<u>n-Hexane</u>	<u>110-54-3</u>	<u>nc</u>			<u>110 *</u>	<u>110 *</u>
<u>Hexazinone</u>	<u>51235-04-2</u>	<u>nc</u>			<u>2.020</u>	<u>20,000</u>
<u>Hydrazine, hydrazine sulfate</u>	<u>302-01-2</u>	<u>ca</u>	<u>0.18</u>	<u>1.8</u>		<u>5.7</u>
<u>Hydrazine, monomethyl</u>	<u>60-34-4</u>	<u>ca</u>	<u>0.18</u>	<u>1.8</u>		<u>5.7</u>
<u>Hydrazine, dimethyl</u>	<u>57-14-7</u>	<u>ca</u>	<u>0.18</u>	<u>1.8</u>		<u>5.7</u>
<u>p-Hydroquinone</u>	<u>123-31-9</u>	<u>ca, nc</u>	<u>9.8</u>	<u>98</u>		<u>310</u>
<u>Imazalil</u>	<u>35554-44-0</u>	<u>nc</u>			<u>790</u>	<u>8,000</u>
<u>Imazaquin</u>	<u>81335-37-7</u>	<u>nc</u>			<u>15,000</u>	<u>150,000</u>
<u>Iprodione</u>	<u>36734-19-7</u>	<u>nc</u>			<u>2,400</u>	<u>25,000</u>
<u>Isobutanol</u>	<u>78-83-1</u>	<u>nc</u>			<u>13,000</u>	<u>40,000 *</u>
<u>Isophorone</u>	<u>78-59-1</u>	<u>ca, nc</u>	<u>580</u>	<u>5,800</u>		<u>18,000</u>
<u>Isopropalin</u>	<u>33820-53-0</u>	<u>nc</u>			<u>920</u>	<u>9,200</u>
<u>Isopropyl methyl phosphonic acid</u>	<u>1832-54-8</u>	<u>nc</u>			<u>6,100</u>	<u>62,000</u>
<u>Isoxaben</u>	<u>82558-50-7</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>Kepone</u>	<u>143-50-0</u>	<u>ca, nc</u>	<u>0.068</u>	<u>0.68</u>		<u>2.2</u>
<u>Lactofen</u>	<u>77501-63-4</u>	<u>nc</u>			<u>120</u>	<u>1,200</u>
<u>Lead</u>	<u>7439-92-1</u>	<u>ca, nc</u>			<u>400</u>	<u>800</u>
<u>Lead (tetraethyl)</u>	<u>78-00-2</u>	<u>nc</u>			<u>0.0061</u>	<u>0.062</u>
<u>Linuron</u>	<u>330-55-2</u>	<u>nc</u>			<u>120</u>	<u>1,200</u>
<u>Lithium</u>	<u>7439-93-2</u>	<u>nc</u>			<u>1,600</u>	<u>20,000</u>
<u>Londax</u>	<u>83055-99-6</u>	<u>nc</u>			<u>12,000</u>	<u>120,000</u>
<u>Malathion</u>	<u>121-75-5</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>Maleic anhydride</u>	<u>108-31-6</u>	<u>nc</u>			<u>6,100</u>	<u>62,000</u>
<u>Maleic hydrazide</u>	<u>123-33-1</u>	<u>nc</u>			<u>1,700</u>	<u>2,400 *</u>
<u>Malononitrile</u>	<u>109-77-3</u>	<u>nc</u>			<u>6.1</u>	<u>62</u>
<u>Mancozeb</u>	<u>8018-01-7</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>Maneb</u>	<u>12427-38-2</u>	<u>ca, nc</u>	<u>9.1</u>	<u>91</u>		<u>290</u>
<u>Manganese</u>	<u>7439-96-5</u>	<u>nc</u>			<u>3,300</u>	<u>32,000</u>
<u>Mephosfolan</u>	<u>950-10-7</u>	<u>nc</u>			<u>5.5</u>	<u>55</u>
<u>Mepiquat</u>	<u>24307-26-4</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>2-Mercaptobenzothiazole</u>	<u>149-30-4</u>	<u>ca, nc</u>	<u>19</u>	<u>190</u>		<u>590</u>
<u>Mercury and compounds</u>	<u>7487-94-7</u>	<u>nc</u>			<u>23</u>	<u>310</u>
<u>Mercury (methyl)</u>	<u>22967-92-6</u>	<u>nc</u>			<u>6.1</u>	<u>62</u>
<u>Merphos</u>	<u>150-50-5</u>	<u>nc</u>			<u>1.8</u>	<u>18</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>Merphos oxide</u>	<u>78-48-8</u>	<u>nc</u>			<u>1.8</u>	<u>18</u>
<u>Metalaxyl</u>	<u>57837-19-1</u>	<u>nc</u>			<u>3,700</u>	<u>37,000</u>
<u>Methacrylonitrile</u>	<u>126-98-7</u>	<u>nc</u>			<u>2.1</u>	<u>8.4</u>
<u>Methamidophos</u>	<u>10265-92-6</u>	<u>nc</u>			<u>3.1</u>	<u>31</u>
<u>Methanol</u>	<u>67-56-1</u>	<u>nc</u>			<u>31,000</u>	<u>310,000</u>
<u>Methidathion</u>	<u>950-37-8</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>Methomyl</u>	<u>16752-77-5</u>	<u>nc</u>			<u>44</u>	<u>150</u>
<u>Methoxychlor</u>	<u>72-43-5</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>2-Methoxyethanol</u>	<u>109-86-4</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>2-Methoxyethanol acetate</u>	<u>110-49-6</u>	<u>nc</u>			<u>120</u>	<u>1,200</u>
<u>2-Methoxy-5-nitroaniline</u>	<u>99-59-2</u>	<u>ca</u>	<u>12</u>	<u>120</u>		<u>370</u>
<u>Methyl acetate</u>	<u>79-20-9</u>	<u>nc</u>			<u>22,000</u>	<u>92,000</u>
<u>Methyl acrylate</u>	<u>96-33-3</u>	<u>nc</u>			<u>70</u>	<u>230</u>
<u>2-Methylaniline (o-toluidine)</u>	<u>95-53-4</u>	<u>ca</u>	<u>2.3</u>	<u>23</u>		<u>72</u>
<u>2-Methylaniline hydrochloride</u>	<u>636-21-5</u>	<u>ca</u>	<u>3.0</u>	<u>30</u>		<u>96</u>
<u>2-Methyl-4-chlorophenoxyacetic acid</u>	<u>94-74-6</u>	<u>nc</u>			<u>31</u>	<u>310</u>
<u>4-(2-Methyl-4-chlorophenoxy) butyric acid (MCPB)</u>	<u>94-81-5</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>2-(2-Methyl-4-chlorophenoxy) propionic acid</u>	<u>93-65-2</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>2-(2-Methyl-1,4-chlorophenoxy) propionic acid (MCPB)</u>	<u>16484-77-8</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>Methylcyclohexane</u>	<u>108-87-2</u>	<u>nc</u>			<u>230 *</u>	<u>230 *</u>
<u>4,4'-Methylenebisbenzeneamine</u>	<u>101-77-9</u>	<u>ca</u>	<u>2.2</u>	<u>22</u>		<u>69</u>
<u>4,4'-Methylene bis(2-chloroaniline)</u>	<u>101-14-4</u>	<u>ca, nc</u>	<u>4.2</u>	<u>42</u>		<u>130</u>
<u>4,4'-Methylene bis(N,N'-dimethyl) aniline</u>	<u>101-61-1</u>	<u>ca</u>	<u>12</u>	<u>120</u>		<u>370</u>
<u>Methylene bromide</u>	<u>74-95-3</u>	<u>nc</u>			<u>67</u>	<u>230</u>
<u>Methylene chloride</u>	<u>75-09-2</u>	<u>ca, nc</u>	<u>9.3</u>	<u>93</u>		<u>210</u>
<u>4,4'-Methylenediphenyl diisocyanate</u>	<u>101-68-8</u>	<u>nc</u>			<u>10</u>	<u>110</u>
<u>Methyl ethyl ketone (MEK)</u>	<u>78-93-3</u>	<u>nc</u>			<u>23,000</u>	<u>34,000 *</u>
<u>Methyl isobutyl ketone (MIBK)</u>	<u>108-10-1</u>	<u>nc</u>			<u>5,300</u>	<u>17,000 *</u>
<u>Methyl mercaptan</u>	<u>74-93-1</u>	<u>nc</u>			<u>35</u>	<u>350</u>
<u>Methyl methacrylate</u>	<u>80-62-6</u>	<u>nc</u>			<u>2,200</u>	<u>2,700 *</u>
<u>2-Methyl-5-nitroaniline</u>	<u>99-55-8</u>	<u>ca</u>	<u>17</u>	<u>170</u>		<u>520</u>
<u>Methyl parathion</u>	<u>298-00-0</u>	<u>nc</u>			<u>15</u>	<u>150</u>
<u>2-Methylphenol</u>	<u>95-48-7</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>3-Methylphenol</u>	<u>108-39-4</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>

Arizona Administrative Register / Secretary of State
Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
4-Methylphenol	<u>106-44-5</u>	nc			310	<u>3,100</u>
Methyl phosphonic acid	<u>993-13-5</u>	nc			1,200	<u>12,000</u>
Methyl styrene (mixture)	<u>25013-15-4</u>	nc			130	540
Methyl styrene (alpha)	<u>98-83-9</u>	nc			680 *	680 *
Methyl tertbutyl ether (MTBE)	<u>1634-04-4</u>	ca, nc	<u>32</u>	<u>320</u>		<u>710</u>
Metolaclor (Dual)	<u>51218-45-2</u>	nc			9,200	<u>92,000</u>
Metribuzin	<u>21087-64-9</u>	nc			1,500	<u>15,000</u>
Mirex	<u>2385-85-5</u>	ca, nc	<u>0.30</u>	<u>3.0</u>		<u>9.6</u>
Molinate	<u>2212-67-1</u>	nc			120	<u>1,200</u>
Molybdenum	<u>7439-98-7</u>	nc			390	<u>5,100</u>
Monochloramine	<u>10599-90-3</u>	nc			6,100	<u>62,000</u>
Naled	<u>300-76-5</u>	nc			120	<u>1,200</u>
Napropamide	<u>15299-99-7</u>	nc			6,100	<u>62,000</u>
Nickel and compounds	<u>7440-02-0</u>	nc			1,600	<u>20,000</u>
Nickel subsulfide	<u>12035-72-2</u>	ca	<u>5,200</u>	NA		<u>11,000</u>
2-Nitroaniline	<u>88-74-4</u>	nc			180	<u>1,800</u>
3-Nitroaniline	<u>99-09-2</u>	ca, nc			18	<u>180</u>
4-Nitroaniline	<u>100-01-6</u>	ca, nc	<u>26</u>	<u>260</u>	180	<u>820</u>
Nitrobenzene	<u>98-95-3</u>	nc			20	<u>100</u>
Nitrofurantoin	<u>67-20-9</u>	nc			4,300	<u>43,000</u>
Nitrofurazone	<u>59-87-0</u>	ca	<u>0.37</u>	<u>3.7</u>		<u>11</u>
Nitroglycerin	<u>55-63-0</u>	ca	<u>39</u>	<u>390</u>		<u>1,200</u>
Nitroguanidine	<u>556-88-7</u>	nc			6,100	<u>62,000</u>
2-Nitropropane	<u>79-46-9</u>	ca, nc	<u>0.0028</u>	<u>0.028</u>		<u>0.061</u>
N-Nitrosodi-n-butylamine	<u>924-16-3</u>	ca	<u>0.025</u>	<u>0.25</u>		<u>0.58</u>
N-Nitrosodiethanolamine	<u>1116-54-7</u>	ca	<u>0.20</u>	<u>2.0</u>		<u>6.2</u>
N-Nitrosodiethylamine	<u>55-18-5</u>	ca	<u>0.0037</u>	<u>0.037</u>		<u>0.11</u>
N-Nitrosodimethylamine	<u>62-75-9</u>	ca, nc	<u>0.011</u>	<u>0.11</u>		<u>0.34</u>
N-Nitrosodiphenylamine	<u>86-30-6</u>	ca, nc	<u>110</u>	<u>1,100</u>		<u>3,500</u>
N-Nitroso di-n-propylamine	<u>621-64-7</u>	ca	<u>0.078</u>	<u>0.78</u>		<u>2.5</u>
N-Nitroso-N-methylethylamine	<u>10595-95-6</u>	ca	<u>0.025</u>	<u>0.25</u>		<u>0.78</u>
N-Nitrosopyrrolidine	<u>930-55-2</u>	ca	<u>0.26</u>	<u>2.6</u>		<u>8.2</u>
m-Nitrotoluene	<u>99-08-1</u>	nc			730	<u>1,000 *</u>
o-Nitrotoluene	<u>88-72-2</u>	ca, nc	<u>0.93</u>	<u>9.3</u>		<u>22</u>
p-Nitrotoluene	<u>99-99-0</u>	ca, nc	<u>13</u>	<u>130</u>		<u>300</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
Norflurazon	<u>27314-13-2</u>	nc			2,400	25,000
NuStar	<u>85509-19-9</u>	nc			43	430
Octabromodiphenyl ether	<u>32536-52-0</u>	nc			180	1,800
Octahydro-1357-tetranitro-1357-tetrazocine (HMX)	<u>2691-41-0</u>	nc			3,100	31,000
Octamethylpyrophosphoramidate	<u>152-16-9</u>	nc			120	1,200
Oryzalin	<u>19044-88-3</u>	nc			3,100	31,000
Oxadiazon	<u>19666-30-9</u>	nc			310	3,100
Oxamyl	<u>23135-22-0</u>	nc			1,500	15,000
Oxyfluorfen	<u>42874-03-3</u>	nc			180	1,800
Paclobutrazol	<u>76738-62-0</u>	nc			790	8,000
Paraquat	<u>4685-14-7</u>	nc			270	2,800
Parathion	<u>56-38-2</u>	nc			370	3,700
Pebulate	<u>1114-71-2</u>	nc			3,100	31,000
Pendimethalin	<u>40487-42-1</u>	nc			2,400	25,000
Pentabromo-6-chloro cyclohexane	<u>87-84-3</u>	ca	24	240		750
Pentabromodiphenyl ether	<u>32534-81-9</u>	nc			120	1,200
Pentachlorobenzene	<u>608-93-5</u>	nc			49	490
Pentachloronitrobenzene	<u>82-68-8</u>	ca, nc	2.1	21		66
Pentachlorophenol	<u>87-86-5</u>	ca, nc	3.2	32		90
Perchlorate	<u>7601-90-3</u>	nc			55	720
Permethrin	<u>52645-53-1</u>	nc			3,100	31,000
Phenmedipham	<u>13684-63-4</u>	nc			15,000	150,000
Phenol	<u>108-95-2</u>	nc			18,000	180,000
Phenothiazine	<u>92-84-2</u>	nc			120	1,200
m-Phenylenediamine	<u>108-45-2</u>	nc			370	3,700
o-Phenylenediamine	<u>95-54-5</u>	ca	12	120		370
p-Phenylenediamine	<u>106-50-3</u>	nc			12,000	120,000
Phenylmercuric acetate	<u>62-38-4</u>	nc			4.9	49
2-Phenylphenol	<u>90-43-7</u>	ca	280	2,800		8,900
Phorate	<u>298-02-2</u>	nc			12	120
Phosmet	<u>732-11-6</u>	nc			1,200	12,000
Phosphine	<u>7803-51-2</u>	nc			18	180
Phosphorus (white)	<u>7723-14-0</u>	nc			1.6	20
p-Phthalic acid	<u>100-21-0</u>	nc			61,000	620,000
Phthalic anhydride	<u>85-44-9</u>	nc			120,000	1,000,000 **

Arizona Administrative Register / Secretary of State
Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
Picloram	1918-02-1	nc			4,300	43,000
Pirimiphos-methyl	29232-93-7	nc			610	6,200
Polybrominated biphenyls (PBBs)	NA	ca, nc	0.062	0.62	0.43	1.9
Polychlorinated biphenyls (PCBs), low-risk mixture ⁴	12674-11-2	ca, nc			3.9	37
Polychlorinated biphenyls (PCBs), high-risk mixture ²	11097-69-1	ca, nc	0.25	2.5	1.1	7.4
Polychlorinated terphenyls	61788-33-8	ca	0.12	1.2		3.8
Polynuclear aromatic hydrocarbons						
Acenaphthene	83-32-9	nc			3,700	29,000
Anthracene	120-12-7	nc			22,000	240,000
Benz[a]anthracene	56-55-3	ca	0.69	6.9		21
Benzo[b]fluoranthene	205-99-2	ca	0.69	6.9		21
Benzo[k]fluoranthene	207-08-9	ca	6.9	69		210
Benzo[a]pyrene	50-32-8	ca	0.069	0.69		2.1
Chrysene	218-01-9	ca	68	680		2,000
Dibenz[ah]anthracene	53-70-3	ca	0.069	0.69		2.1
Fluoranthene	206-44-0	nc			2,300	22,000
Fluorene	86-73-7	nc			2,700	26,000
Indeno[1,2,3-cd]pyrene	193-39-5	ca	0.69	6.9		21
Naphthalene	91-20-3	nc			56	190
Pyrene	129-00-0	nc			2,300	29,000
Prochloraz	67747-09-5	ca, nc	3.7	37		110
Profluralin	26399-36-0	nc			370	3,700
Prometon	1610-18-0	nc			920	9,200
Prometryn	7287-19-6	nc			240	2,500
Pronamide	23950-58-5	nc			4,600	46,000
Propachlor	1918-16-7	nc			790	8,000
Propanil	709-98-8	nc			310	3,100
Propargite	2312-35-8	nc			1,200	12,000
Propargyl alcohol	107-19-7	nc			120	1,200
Propazine	139-40-2	nc			1,200	12,000
Propham	122-42-9	nc			1,200	12,000
Propiconazole	60207-90-1	nc			790	8,000
n-Propylbenzene	103-65-1	nc			240 *	240 *
Propylene glycol	57-55-6	nc			30,000	290,000

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>Propylene glycol, monoethyl ether</u>	<u>52125-53-8</u>	<u>nc</u>			<u>43,000</u>	<u>430,000</u>
<u>Propylene glycol, monomethyl ether</u>	<u>107-98-2</u>	<u>nc</u>			<u>43,000</u>	<u>430,000</u>
<u>Propylene oxide</u>	<u>75-56-9</u>	<u>ca. nc</u>	<u>2.2</u>	<u>22</u>		<u>66</u>
<u>Pursuit</u>	<u>81335-77-5</u>	<u>nc</u>			<u>15,000</u>	<u>150,000</u>
<u>Pydrin</u>	<u>51630-58-1</u>	<u>nc</u>			<u>1,500</u>	<u>15,000</u>
<u>Pyridine</u>	<u>110-86-1</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>Quinalphos</u>	<u>13593-03-8</u>	<u>nc</u>			<u>31</u>	<u>310</u>
<u>Quinoline</u>	<u>91-22-5</u>	<u>ca</u>	<u>0.18</u>	<u>1.8</u>		<u>5.7</u>
<u>RDX (Cyclonite)</u>	<u>121-82-4</u>	<u>ca. nc</u>	<u>5.0</u>	<u>50</u>		<u>160</u>
<u>Resmethrin</u>	<u>10453-86-8</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>Ronnel</u>	<u>299-84-3</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>Rotenone</u>	<u>83-79-4</u>	<u>nc</u>			<u>240</u>	<u>2,500</u>
<u>Savey</u>	<u>78587-05-0</u>	<u>nc</u>			<u>1,500</u>	<u>15,000</u>
<u>Selenious Acid</u>	<u>7783-00-8</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Selenium</u>	<u>7782-49-2</u>	<u>nc</u>			<u>390</u>	<u>5,100</u>
<u>Selenourea</u>	<u>630-10-4</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Sethoxydim</u>	<u>74051-80-2</u>	<u>nc</u>			<u>5,500</u>	<u>55,000</u>
<u>Silver and compounds</u>	<u>7440-22-4</u>	<u>nc</u>			<u>390</u>	<u>5,100</u>
<u>Simazine</u>	<u>122-34-9</u>	<u>ca. nc</u>	<u>4.6</u>	<u>46</u>		<u>140</u>
<u>Sodium azide</u>	<u>26628-22-8</u>	<u>nc</u>			<u>310</u>	<u>4,100</u>
<u>Sodium diethyldithiocarbamate</u>	<u>148-18-5</u>	<u>ca. nc</u>	<u>2.0</u>	<u>20</u>		<u>64</u>
<u>Sodium fluoroacetate</u>	<u>62-74-8</u>	<u>nc</u>			<u>1.2</u>	<u>12</u>
<u>Sodium metavanadate</u>	<u>13718-26-8</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>Strontium, stable</u>	<u>7440-24-6</u>	<u>nc</u>			<u>47,000</u>	<u>610,000</u>
<u>Strychnine</u>	<u>57-24-9</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>Styrene</u>	<u>100-42-5</u>	<u>nc</u>			<u>1,500 *</u>	<u>1,500 *</u>
<u>1,1'-Sulfonylbis-(4-chlorobenzene)</u>	<u>80-07-9</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Systhane</u>	<u>88671-89-0</u>	<u>nc</u>			<u>1,500</u>	<u>15,000</u>
<u>Tebuthiuron</u>	<u>34014-18-1</u>	<u>nc</u>			<u>4,300</u>	<u>43,000</u>
<u>Temephos</u>	<u>3383-96-8</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>Terbacil</u>	<u>5902-51-2</u>	<u>nc</u>			<u>790</u>	<u>8,000</u>
<u>Terbufos</u>	<u>13071-79-9</u>	<u>nc</u>			<u>1.5</u>	<u>15</u>
<u>Terbutryn</u>	<u>886-50-0</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>1,2,4,5-Tetrachlorobenzene</u>	<u>95-94-3</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>1,1,1,2-Tetrachloroethane</u>	<u>630-20-6</u>	<u>ca. nc</u>	<u>3.2</u>	<u>32</u>		<u>73</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>1,1,2,2-Tetrachloroethane</u>	<u>79-34-5</u>	<u>ca. nc</u>	<u>0.42</u>	<u>4.2</u>		<u>9.3</u>
<u>Tetrachloroethylene (PCE)</u>	<u>127-18-4</u>	<u>ca. nc</u>	<u>0.51</u>	<u>5.1</u>		<u>13</u>
<u>2,3,4,6-Tetrachlorophenol</u>	<u>58-90-2</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>p.a.a.a-Tetrachlorotoluene</u>	<u>5216-25-1</u>	<u>ca</u>	<u>0.027</u>	<u>0.27</u>		<u>0.86</u>
<u>Tetrachlorovinphos</u>	<u>961-11-5</u>	<u>ca. nc</u>	<u>23</u>	<u>230</u>		<u>720</u>
<u>Tetraethyldithiopyrophosphate</u>	<u>3689-24-5</u>	<u>nc</u>			<u>31</u>	<u>310</u>
<u>Tetrahydrofuran</u>	<u>109-99-9</u>	<u>ca. nc</u>	<u>9.5</u>	<u>95</u>		<u>210</u>
<u>Thallium and compounds</u>	<u>7440-28-0</u>	<u>nc</u>			<u>5.2</u>	<u>67</u>
<u>Thiobencarb</u>	<u>28249-77-6</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>Thiocyanate</u>	<u>NA</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>Thiofanox</u>	<u>39196-18-4</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>Thiophanate-methyl</u>	<u>23564-05-8</u>	<u>nc</u>			<u>4,900</u>	<u>49,000</u>
<u>Thiram</u>	<u>137-26-8</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Tin</u>	<u>7440-31-5</u>	<u>nc</u>			<u>47,000</u>	<u>610,000</u>
<u>Titanium</u>	<u>7440-32-6</u>	<u>nc</u>			<u>310,000</u>	<u>1,000,000 **</u>
<u>Toluene</u>	<u>108-88-3</u>	<u>nc</u>			<u>650 *</u>	<u>650 *</u>
<u>Toluene-2,4-diamine</u>	<u>95-80-7</u>	<u>ca</u>	<u>0.17</u>	<u>1.7</u>		<u>5.4</u>
<u>Toluene-2,5-diamine</u>	<u>95-70-5</u>	<u>nc</u>			<u>37,000</u>	<u>370,000</u>
<u>Toluene-2,6-diamine</u>	<u>823-40-5</u>	<u>nc</u>			<u>12,000</u>	<u>120,000</u>
<u>p-Toluidine</u>	<u>106-49-0</u>	<u>ca</u>	<u>2.9</u>	<u>29</u>		<u>91</u>
<u>Toxaphene</u>	<u>8001-35-2</u>	<u>ca</u>	<u>0.50</u>	<u>5.0</u>		<u>16</u>
<u>Tralomethrin</u>	<u>66841-25-6</u>	<u>nc</u>			<u>460</u>	<u>4,600</u>
<u>Triallate</u>	<u>2303-17-5</u>	<u>nc</u>			<u>790</u>	<u>8,000</u>
<u>Triasulfuron</u>	<u>82097-50-5</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>1,2,4-Tribromobenzene</u>	<u>615-54-3</u>	<u>nc</u>			<u>310</u>	<u>3,100</u>
<u>Tributyl phosphate</u>	<u>126-73-8</u>	<u>ca. nc</u>	<u>60</u>	<u>600</u>		<u>1,900</u>
<u>Tributyltin oxide (TBTO)</u>	<u>56-35-9</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>2,4,6-Trichloroaniline</u>	<u>634-93-5</u>	<u>ca</u>	<u>16</u>	<u>160</u>		<u>510</u>
<u>2,4,6-Trichloroaniline hydrochloride</u>	<u>33663-50-2</u>	<u>ca</u>	<u>19</u>	<u>190</u>		<u>590</u>
<u>1,2,4-Trichlorobenzene</u>	<u>120-82-1</u>	<u>nc</u>			<u>62</u>	<u>220</u>
<u>1,1,1-Trichloroethane</u>	<u>71-55-6</u>	<u>nc</u>			<u>1,200 *</u>	<u>1,200 *</u>
<u>1,1,2-Trichloroethane</u>	<u>79-00-5</u>	<u>ca. nc</u>	<u>0.74</u>	<u>7.4</u>		<u>16</u>
<u>Trichloroethylene (TCE)</u>	<u>79-01-6</u>	<u>ca. nc</u>	<u>3.0</u>	<u>30</u>	<u>17</u>	<u>65</u>
<u>Trichlorofluoromethane</u>	<u>75-69-4</u>	<u>nc</u>			<u>390</u>	<u>1,300</u>
<u>2,4,5-Trichlorophenol</u>	<u>95-95-4</u>	<u>nc</u>			<u>6,100</u>	<u>62,000</u>

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10⁻⁶ Risk	10⁻⁵ Risk		
<u>2,4,6-Trichlorophenol</u>	<u>88-06-2</u>	<u>ca. nc</u>			<u>6.1</u>	<u>62</u>
<u>2,4,5-Trichlorophenoxyacetic Acid</u>	<u>93-76-5</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>2-(2,4,5-Trichlorophenoxy) propionic acid</u>	<u>93-72-1</u>	<u>nc</u>			<u>490</u>	<u>4,900</u>
<u>1,1,2-Trichloropropane</u>	<u>598-77-6</u>	<u>nc</u>			<u>15</u>	<u>51</u>
<u>1,2,3-Trichloropropane</u>	<u>96-18-4</u>	<u>ca. nc</u>	<u>0.0050</u>	<u>0.050</u>		<u>0.11</u>
<u>1,2,3-Trichloropropene</u>	<u>96-19-5</u>	<u>nc</u>			<u>0.71</u>	<u>2.3</u>
<u>1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)</u>	<u>76-13-1</u>	<u>nc</u>			<u>5,600 *</u>	<u>5,600 *</u>
<u>Tridiphane</u>	<u>58138-08-2</u>	<u>nc</u>			<u>180</u>	<u>1,800</u>
<u>Triethylamine</u>	<u>121-44-8</u>	<u>nc</u>			<u>23</u>	<u>86</u>
<u>Trifluralin</u>	<u>1582-09-8</u>	<u>ca. nc</u>	<u>71</u>	<u>710</u>	<u>460</u>	<u>2,200</u>
<u>Trimellitic Anhydride (TMAN)</u>	<u>552-30-7</u>	<u>nc</u>			<u>8.6</u>	<u>86</u>
<u>1,2,4-Trimethylbenzene</u>	<u>95-63-6</u>	<u>nc</u>			<u>52</u>	<u>170</u>
<u>1,3,5-Trimethylbenzene</u>	<u>108-67-8</u>	<u>nc</u>			<u>21</u>	<u>70</u>
<u>Trimethyl phosphate</u>	<u>512-56-1</u>	<u>ca</u>	<u>15</u>	<u>150</u>		<u>470</u>
<u>1,3,5-Trinitrobenzene</u>	<u>99-35-4</u>	<u>nc</u>			<u>1,800</u>	<u>18,000</u>
<u>Trinitrophenylmethyl nitramine</u>	<u>479-45-8</u>	<u>nc</u>			<u>610</u>	<u>6,200</u>
<u>2,4,6-Trinitrotoluene</u>	<u>118-96-7</u>	<u>ca. nc</u>	<u>18</u>	<u>180</u>	<u>31</u>	<u>310</u>
<u>Triphenylphosphine oxide</u>	<u>791-28-6</u>	<u>nc</u>			<u>1,200</u>	<u>12,000</u>
<u>Tris(2-chloroethyl) phosphate</u>	<u>115-96-8</u>	<u>ca. nc</u>	<u>39</u>	<u>390</u>		<u>1,200</u>
<u>Tris(2-ethylhexyl) phosphate</u>	<u>78-42-2</u>	<u>ca. nc</u>	<u>170</u>	<u>1,700</u>		<u>5,400</u>
<u>Uranium (chemical toxicity only)</u>	<u>7440-61-0</u>	<u>nc</u>			<u>16</u>	<u>200</u>
<u>Vanadium and compounds</u>	<u>7440-62-2</u>	<u>nc</u>			<u>78</u>	<u>1,000</u>
<u>Vernam</u>	<u>1929-77-7</u>	<u>nc</u>			<u>61</u>	<u>620</u>
<u>Vinclozolin</u>	<u>50471-44-8</u>	<u>nc</u>			<u>1,500</u>	<u>15,000</u>
<u>Vinyl acetate</u>	<u>108-05-4</u>	<u>nc</u>			<u>430</u>	<u>1,400</u>
<u>Vinyl bromide</u>	<u>593-60-2</u>	<u>ca. nc</u>	<u>0.19</u>	<u>1.9</u>		<u>4.2</u>
<u>Vinyl chloride</u>	<u>75-01-4</u>	<u>ca. nc</u>	<u>0.085</u>	<u>NA</u>		<u>0.75</u>
<u>Warfarin</u>	<u>81-81-2</u>	<u>nc</u>			<u>18</u>	<u>180</u>
<u>Xylenes</u>	<u>1330-20-7</u>	<u>nc</u>			<u>270</u>	<u>420 *</u>
<u>Zinc</u>	<u>7440-66-6</u>	<u>nc</u>			<u>23,000</u>	<u>310,000</u>
<u>Zinc phosphide</u>	<u>1314-84-7</u>	<u>nc</u>			<u>23</u>	<u>310</u>
<u>Zineb</u>	<u>12122-67-7</u>	<u>nc</u>			<u>3,100</u>	<u>31,000</u>
<u>NA indicates not applicable.</u>						

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

Class is the classification of the chemical. "ca" indicates carcinogenic effects; "nc" indicates non-carcinogenic effects. Chemicals that have both carcinogenic and non-carcinogenic effects are classified "ca, nc".
* Indicates SRL is based on the chemical-specific saturation level in soil for volatile organic chemicals only.
** Indicates SRL is based on a 100% saturation ceiling limit for non-volatile organic chemicals.
¹ Arsenic standards are not risk-based standards, but based on background.
² Cyanide (free): Free cyanide is a subset of total cyanides. If any ADHS approved method for total cyanide reports a concentration exceeding this standard, further analyses to differentiate free cyanide from other cyanide metal complexes is required.
³ Cyanide (hydrogen): If the cyanide concentrations using any method exceed the hydrogen cyanide standard, then hydrogen cyanide vapor samples should be collected at the site.
⁴ PCBs, low-risk mixture: Use if laboratory analysis confirms that the total PCB concentration consists of 0.5 percent or less of congeners that contain five or more chlorines and that no dioxin-like congeners are present.
⁵ PCBs, high-risk mixture: Use if only total PCB concentration is reported by any ADHS licensed analytical method, or if laboratory analysis confirms that the total PCB concentration consists of more than 0.5 percent congeners that contain five or more chlorines or that dioxin-like congeners are present.
Bold indicates adequate evidence to classify the chemical as a known human carcinogen.
CASRN is the Chemical Abstract System Registry Number.

Appendix B: Notice of Voluntary Environmental Mitigation Use Restriction By Owner or Owners

When recorded, mail to:

NOTICE OF VOLUNTARY ENVIRONMENTAL MITIGATION
USE RESTRICTION BY OWNER OR OWNERS

Pursuant to A.R.S. § 49-152(B), the owner or owners _____ of the following described property:

(Please Print)

(insert legal description of entire parcel)

has (have) remediated a portion of the above described property, which remediated portion is described as follows:

(insert legal description of remediated portion, the source of the release, and the remaining contaminants)

The date when the remediation was completed is: _____

The undersigned owner voluntarily agrees to limit and restrict the use of the remediated portion of the property to non-residential uses, as defined in A.R.S. § 49-151(A).

Signature of owner

STATE OF ARIZONA
County of _____

On this _____ day of _____, 19____, before me personally appeared _____ (name of signer), whose identity was proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this document, and who acknowledged that he/she signed the above document.

Notary Public

(Notary Seal)

My commission expires: _____

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

 _____ (if 2nd owner's signature is required)
 Signature of owner

STATE OF ARIZONA

County of _____

On this _____ day of _____, 19____, before me personally appeared _____ (name of signer), whose identity was proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this document, and who acknowledged that he/she signed the above document.

 Notary Public

(Notary Seal)

My commission expires: _____

Approved: _____
 (ADEQ official)

STATE OF ARIZONA

County of _____

On this _____ day of _____, 19____, before me personally appeared _____ (name of signer), whose identity was proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this document, and who acknowledged that he/she signed the above document.

 Notary Public

(Notary Seal)

My commission expires: _____

Please make no marks below this line

Appendix A-B. 1997 Soil Remediation Levels (SRLs)

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/kg)	Non-residential (mg/kg)
A					
1	Acenaphthene	83-32-9	D	3900.0	41000.0
2	Acephate	30560-19-1	C	260.0	2200.0
3	Acetaldehyde	75-07-0	B2	39.0	150.0
4	Acetochlor	34256-82-1	D	1300.0	14000.0
5	Acetone	67-64-1	D	2100.0	8800.0
6	Acetone cyanohydrin	75-86-5	D	52.0	550.0
7	Acetonitrile	75-05-8	D	220.0	1200.0
8	Acetophenone	98-86-2	D	0.49	1.6
9	Acifluorfen	62476-59-9	D	850.0	8900.0
10	Acrolein	107-02-8	C	0.10	0.34

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
11	Acrylamide	79-06-1	B2	0.98	4.2
12	Acrylic acid	79-10-7	D	31000.0	290000.0
13	Acrylonitrile	107-13-1	B1	1.9	4.7
14	Alachlor	15972-60-8	B2	55.0	240.0
15	Alar	1596-84-5	D	9800.0	100000.0
16	Aldicarb	116-06-3	D	65.0	680.0
17	Aldicarb sulfone	1646-88-4	D	65.0	680.0
18	Aldrin	309-00-2	B2	0.26	1.1
19	Ally	5585-64-8 <u>74223-64-6</u>	D	16000.0	170000.0
20	Allyl alcohol	107-18-6	D	330.0	3400.0
21	Allyl chloride	107-05-1	C	3200.0	33000.0
22	Aluminum	7429-90-5	D	77000.0	1000000.0
23	Aluminum phosphide	20859-73-8	D	31.0	680.0
24	Amdro	67485-29-4	D	20.0	200.0
25	Ametryn	834-12-8	D	590.0	6100.0
26	m-Aminophenol	591-27-5	D	4600.0	48000.0
27	4-Aminopyridine	504-24-5	D	1.3	14.0
28	Amitraz	33089-61-1	D	160.0	1700.0
29	Ammonia	7664-41-7	D	2200.0	58000.0
30	Ammonium sulfamate	7773-06-0	D	13000.0	140000.0
31	Aniline	62-53-3	B2	19.0	200.0
32	Anthracene	120-12-7	D	20000.0	200000.0
33	Antimony and compounds	7440-36-0	D	31.0	680.0
34	Antimony pentoxide	1314-60-9	D	38.0	850.0
35	Antimony potassium tartrate	28300-74-5	D	69.0	1500.0
36	Antimony tetroxide	1332-81-6	D	31.0	680.0
37	Antimony trioxide	1309-64-4	D	31.0	680.0
38	Apollo	74115-24-5	C	850.0	8900.0
39	Aramite	140-57-8	B2	180.0	760.0
40	~Arsenic	7440-38-2	A	10.0	10.0
41	Assure	76578-12-6 <u>76578-14-8</u>	D	590.0	6100.0
42	Asulam	3337-71-1	D	3300.0	34000.0
43	Atrazine	1912-24-9	C	20.0	86.0
44	Avermectin B1	65195-55-3 <u>71751-41-2</u>	D	26.0	270.0
45	Azobenzene	103-33-3	B2	40.0	170.0

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
	B				
46	Barium and compounds	7440-39-3	D	5300.0	110000.0
47	Barium cyanide	542-62-1	D	7700.0	170000.0
48	Baygon	114-26-1	D	260.0	2700.0
49	Bayleton	43121-43-3	D	2000.0	20000.0
50	Baythroid	68359-37-5	D	1600.0	17000.0
51	Benefin	1861-40-1	D	20000.0	200000.0
52	Benomyl	17804-35-2	D	3300.0	34000.0
53	Bentazon	25057-89-0	D	160.0	1700.0
54	Benzaldehyde	100-52-7	D	6500.0	68000.0
55	Benz[a]anthracene	56-55-3	B2	6.1	26.0
56	Benzene	71-43-2	A	0.62	1.4
57	Benzidine	92-87-5	A	0.0019	0.0083
58	Benzo[a]pyrene	50-32-8	B2	0.61	2.6
59	Benzo[b]fluoranthene	205-99-2	B2	6.1	26.0
60	Benzoic acid	65-85-0	D	260000.0	1000000.0
61	Benzo[k]fluoranthene	207-08-9	B2	61.0	260.0
62	Benzotrichloride	98-07-7	B2	0.34	1.5
63	Benzyl alcohol	100-51-6	D	20000.0	200000.0
64	Benzyl chloride	100-44-7	B2	8.0	20.0
65	Beryllium and compounds	7440-41-7	B2	1.4	11.0
66	Bidrin	141-66-2	D	6.5	68.0
67	Biphenethrin (Talstar)	82657-04-3	D	980.0	10000.0
68	1,1-Biphenyl	92-52-4	D	3300.0	34000.0
69	Bis(2-chloroethyl)ether	111-44-4	B2	0.43	0.97
70	Bis(2-chloroisopropyl)ether	39638-32-9	C	25.0	67.0
71	Bis(chloromethyl)ether	542-88-1	A	0.0002	0.0004
72	Bis(2-chloro-1-methylethyl)ether	108-60-1	C	63.0	270.0
73	Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	B2	320.0	1400.0
74	Bisphenol A	80-05-7	D	3300.0	34000.0
75	Boron	7440-42-8	D	5900.0	61000.0
76	Bromodichloromethane	75-27-4	B2	6.3	14.0
77	Bromoform (tribromomethane)	75-25-2	B2	560.0	2400.0
78	Bromomethane	74-83-9	D	6.8	23.0
79	Bromophos	2104-96-3	D	330.0	3400.0
80	Bromoxynil	1689-84-5	D	1300.0	14000.0
81	Bromoxynil octanoate	1689-99-2	D	1300.0	14000.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
82	1,3-Butadiene	106-99-0	B2	0.064	0.14
83	1-Butanol	71-36-3	D	6500.0	68000.0
84	Butylate	2008-41-5	D	3300.0	34000.0
85	Butyl benzyl phthalate	85-68-7	C	13000.00	140000.00
86	Butylphthalyl butylglycolate	85-70-1	D	65000.0	680000.0
	C				
87	Cacodylic acid	75-60-5	D	200.0	2000.0
88	Cadmium and compounds	7440-43-9	B1	38.0	850.0
89	Calcium cyanide	592-01-8	D	3100.0	68000.0
90	Caprolactam	105-60-2	D	33000.0	340000.0
91	Captafol	2425-06-1	C	130.0	1400.0
92	Captan	133-06-2	D	1300.0	5500.0
93	Carbaryl	63-25-2	D	6500.0	68000.0
94	Carbazole	86-74-8	B2	220.0	950.0
95	Carbofuran	1563-66-2	E	330.0	3400.0
96	Carbon disulfide	75-15-0	D	7.5	24.0
97	Carbon tetrachloride	56-23-5	B2	1.6	5.0
98	Carbosulfan	55285-14-8	D	650.0	6800.0
99	Carboxin	5234-68-4	D	6500.0	68000.0
100	Chloral (<u>hydrate</u>)	302-17-0	D	130.0	1400.0
101	Chloramben	133-90-4	D	980.0	10000.0
102	Chloranil	118-75-2	C	11.0	47.0
103	Chlordane	57-74-9 <u>12789-03-6</u>	B2	3.4	15.0
104	Chlorimuron-ethyl	90982-32-4	D	1300.0	14000.0
105	Chlorine cyanide	506-77-4	D	3800.0	85000.0
106	Chloroacetic acid	79-11-8	D	130.0	1400.0
107	2-Chloroacetophenone	532-27-4	D	0.56	5.9
108	4-Chloroaniline	106-47-8	D	260.0	2700.0
109	Chlorobenzene	108-90-7	D	65.0	220.0
110	Chlorobenzilate	510-15-6	B2	16.0	71.0
111	p-Chlorobenzoic acid	74-11-3	D	13000.0	140000.0
112	4-Chlorobenzotrifluoride	98-56-6	D	1300.0	14000.0
113	2-Chloro-1,3-butadiene	126-99-8	D	3.6	12.0
114	1-Chlorobutane	109-69-3	D	710.0	2400.0
115	* 1-Chloro-1,1-difluoroethane	75-68-3	D	2800.0	2800.0
116	* Chlorodifluoromethane	75-45-6	D	2800.0	2800.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
117	Chloroform	67-66-3	B2	2.5	5.3
118	Chloromethane	74-87-3	C	12.0	26.0
119	4-Chloro-2-methylaniline	95-69-2	B2	7.7	33.0
120	4-Chloro-2-methylaniline hydrochloride	3165-93-3	B2	9.7	41.0
121	beta-Chloronaphthalene	91-58-7	D	5200.0	55000.0
122	o-Chloronitrobenzene	88-73-3	B2	180.0	760.0
123	p-Chloronitrobenzene	100-00-5	B2	250.0	1100.0
124	2-Chlorophenol	95-57-8	D	91.0	370.0
125	2-Chloropropane	75-29-6	D	170.0	580.0
126	Chloroethanol	1897-45-6	B2	400.0	1700.0
127	* o-Chlorotoluene	95-49-8	D	160.0	550.0
128	Chlorpropham	101-21-3	D	13000.0	140000.0
129	Chlorpyrifos	2921-88-2	D	200.0	2000.0
130	Chlorpyrifos-methyl	5598-13-0	D	650.0	6800.0
131	Chlorsulfuron	64902-72-3	D	3300.0	34000.0
132	Chlorthiophos	602-38-56-4	D	52.0	550.0
133	Chromium, Total (1/6 ratio Cr VI/Cr III)	N/A	D	2100.0	4500.0
134	Chromium III	16065-83-1	D	77000.0	1000000.0
135	Chromium VI	7440-47-3	A	30.0	64.0
136	Chrysene	218-01-9	B2	610.0	2600.0
137	Cobalt	7440-48-4	D	4600.0	97000.0
138	Copper and compounds	7440-50-8	D	2800.0	63000.0
139	Copper cyanide	544-92-3	D	380.0	8500.0
140	Crotonaldehyde	123-73-9	C	0.052	0.11
141	Cumene	98-82-8	D	19.0	62.0
142	Cyanazine	21725-46-2	D	5.3	23.0
143	Cyanide, Free	57-12-5	D	1300.0	14000.0
144	Cyanogen	460-19-5	D	2600.0	27000.0
145	Cyanogen bromide	506-68-3	D	5900.0	61000.0
146	Cyanogen chloride	506-77-4	D	3300.0	34000.0
147	Cyclohexanone	108-94-1	D	330000.0	1000000.0
148	Cyclohexylamine	108-91-8	D	13000.0	140000.0
149	Cyhalothrin/Karate	68085-85-8	D	330.0	3400.0
150	Cypermethrin	52315-07-8	D	650.0	6800.0
151	Cyromazine	66215-27-8	D	490.0	5100.0
	D				
152	Dacthal	1861-32-1	D	650.0	6800.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
153	Dalapon	75-99-0	D	2000.0	20000.0
154	Danitol	39515-41-8	D	1600.0	17000.0
155	DDD	72-54-8	B2	19.0	80.0
156	DDE	72-55-9	B2	13.0	56.0
157	DDT	50-29-3	B2	13.0	56.0
158	Decabromodiphenyl ether	1163-19-5	C	650.0	6800.0
159	Demeton	8065-48-3	D	2.6	27.0
160	Diallate	2303-16-4	B2	73.0	310.0
161	Diazinon	333-41-5	E	59.0	610.0
162	Dibenz[ah]anthracene	53-70-3	B2	0.61	2.6
163	Dibenzofuran	132-64-9	D	260.0	2700.0
164	1,4-Dibromobenzene	106-37-6	D	650.0	6800.0
165	Dibromochloromethane	124-48-1	C	53.0	230.0
166	1,2-Dibromo-3-chloropropane	96-12-8	B2	3.2	14.0
167	1,2-Dibromoethane	106-93-4	B2	0.049	0.2
168	Dibutyl phthalate	84-74-2	D	6500.0	68000.0
169	Dicamba	1918-00-9	D	2000.0	20000.0
170	* 1,2-Dichlorobenzene	95-50-1	D	1100.0	3900.0
171	* 1,3-Dichlorobenzene	541-73-1	D	500.0	2000.0
172	1,4-Dichlorobenzene	106-46-7	C	190.0	790.0
173	3,3-Dichlorobenzidine	91-94-1	B2	9.9	42.0
174	1,4-Dichloro-2-butene	764-41-0	B2	0.074	0.17
175	Dichlorodifluoromethane	75-71-8	D	94.0	310.0
176	1,1-Dichloroethane	75-34-3	C	500.0	1700.0
177	1,2-Dichloroethane (EDC)	107-06-2	B2	2.5	5.5
178	1,1-Dichloroethylene	75-35-4	C	0.36	0.8
179	1,2-Dichloroethylene (cis)	156-59-2	D	31.0	100.0
180	1,2-Dichloroethylene (trans)	156-60-5	D	78.0	270.0
181	1,2-Dichloroethylene (mixture)	540-59-0	D	35.0	120.0
182	2,4-Dichlorophenol	120-83-2	D	200.0	2000.0
183	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	94-82-6	D	520.0	5500.0
184	2,4-Dichlorophenoxyacetic Acid (2,4-D)	94-75-7	D	650.0	6800.0
185	1,2-Dichloropropane	78-87-5	B2	3.1	6.8
186	1,3-Dichloropropene	542-75-6	B2	2.4	5.5
187	2,3-Dichloropropanol	616-23-9	D	200.0	2000.0
188	Dichlorvos	62-73-7	B2	15.0	66.0
189	Dicofol	115-32-2	C	10.0	43.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
190	Dieldrin	60-57-1	B2	0.28	1.2
191	Diethylene glycol, monobutyl ether	112-34-5	D	370.0	3900.0
192	Diethylene glycol, monoethyl ether	111-90-0	D	130000.0	1000000.0
193	Diethylformamide	617-84-5	D	720.0	7500.0
194	Di(2-ethylhexyl)adipate	103-23-1	C	3700.0	16000.0
195	Diethyl phthalate	84-66-2	D	52000.0	550000.0
196	Diethylstilbestrol	56-53-1	A	0.0001	0.0004
197	Difenzoquat (Avenge)	43222-48-6	D	5200.0	55000.0
198	Diflubenzuron	35367-38-5	D	1300.0	14000.0
199	Diisopropyl methylphosphonate	1445-75-6	D	5200.0	55000.0
200	Dimethipin	55290-64-7	C	1300.0	14000.0
201	Dimethoate	60-51-5	D	13.0	140.0
202	3,3'-Dimethoxybenzidine	119-90-4	B2	320.0	1400.0
203	Dimethylamine	124-40-3	D	0.07	0.24
204	N-N-Dimethylaniline	121-69-7	D	130.0	1400.0
205	2,4-Dimethylaniline	95-68-1	C	5.9	25.0
206	2,4-Dimethylaniline hydrochloride	21436-96-4	C	7.7	33.0
207	3,3'-Dimethylbenzidine	119-93-7	B2	0.48	2.1
208	1,1-Dimethylhydrazine (<u>Hydrazine, dimethyl</u>)	57-14-7	B, C	1.7	7.3
209	1,2-Dimethylhydrazine	540-73-8	B2	0.12	0.52
210	N,N-Dimethylformamide	68-12-2	D	6500.0	68000.0
211	2,4-Dimethylphenol	105-67-9	D	1300.0	14000.0
212	2,6-Dimethylphenol	576-26-1	D	39.0	410.0
213	3,4-Dimethylphenol	95-65-8	D	65.0	680.0
214	Dimethyl phthalate	131-11-3	D	650000.0	1000000.0
215	Dimethyl terephthalate	120-61-6	D	6500.0	68000.0
216	4,6-Dinitro-o-cyclohexyl phenol	131-89-5	D	130.0	1400.0
217	1,3-Dinitrobenzene	99-65-0	D	6.5	68.0
218	1,2-Dinitrobenzene	528-29-0	D	26.0	270.0
219	1,4-Dinitrobenzene	100-25-4	D	26.0	270.0
220	2,4-Dinitrophenol	51-28-5	D	130.0	1400.0
221	Dinitrotoluene mixture	25321-14-6	B2	6.5	28.0
222	2,4-Dinitrotoluene	121-14-2	B2 D	130.0	1400.0
223	2,6-Dinitrotoluene	606-20-2	D	65.0	680.0
224	Dinoseb	88-85-7	D	65.0	680.0
225	di-n-Octyl phthalate	117-84-0	D	1300.0	14000.0
226	1,4-Dioxane	123-91-1	B2	400.0	1700.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
227	Diphenamid	957-51-7	D	2000.0	20000.0
228	Diphenylamine	122-39-4	D	1600.0	17000.0
229	1,2-Diphenylhydrazine	122-66-7	B2	5.6	24.0
230	Diquat	85-00-7	D	140.0	1500.0
231	Direct black 38	1937-37-7	A	0.052	0.22
232	Direct blue 6	2602-46-2	A	0.055	0.24
233	Direct brown 95	16071-86-6	A	0.048	0.21
234	Disulfoton	298-04-4	E	2.6	27.0
235	1,4-Dithiane	505-29-3	D	650.0	6800.0
236	Diuron	330-54-1	D	130.0	1400.0
237	Dodine	2439-10-3	D	260.0	2700.0
	E				
238	Endosulfan	115-29-7	D	390.0	4100.0
239	Endothall	145-73-3	D	1300.0	14000.0
240	Endrin	72-20-8	D	20.0	200.0
241	Epichlorohydrin	106-89-8	B2	7.5	25.0
242	1,2-Epoxybutane	106-88-7	D	370.0	3900.0
243	EPTC (S-Ethyl dipropylthiocarbamate)	759-94-4	D	1600.0	17000.0
244	Ethephon (2-chloroethyl phosphonic acid)	16672-87-0	D	330.0	3400.0
245	Ethion	563-12-2	D	33.0	340.0
246	2-Ethoxyethanol	110-80-5	D	26000.0	270000.0
247	2-Ethoxyethanol acetate	111-15-9	D	20000.0	200000.0
248	* Ethyl acetate	141-78-6	D	18000.0	39000.0
249	Ethyl acrylate	140-88-5	B2	2.1	4.5
250	* Ethylbenzene	100-41-4	D	1500.0	2700.0
251	Ethylene cyanohydrin	109-78-4	D	20000.0	200000.0
252	Ethylene diamine	107-15-3	D	1300.0	14000.0
253	Ethylene glycol	107-21-1	D	130000.0	1000000.0
254	Ethylene glycol, monobutyl ether	111-76-2	D	370.0	3900.0
255	Ethylene oxide	75-21-8	B1	1.3	3.2
256	Ethylene thiourea (ETU)	96-45-7	B2	5.2	55.0
257	* Ethyl chloride	75-00-3	D	1100.0	4200.0
258	* Ethyl ether	60-29-7	D	3800.0	3800.0
259	* Ethyl methacrylate	97-63-2	D	210.0	690.0
260	Ethyl p-nitrophenyl phenylphosphorothioate	2104-64-5	D	0.65	6.8
261	Ethylphthalyl ethyl glycolate	84-72-0	D	200000.0	1000000.0
262	Express	101200-48-0	D	520.0	5500.0

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
	F				
263	Fenamiphos	22224-92-6	D	16.0	170.0
264	Fluometuron	2164-17-2	D	850.0	8900.0
265	Fluoranthene	206-44-0	D	2600.0	27000.0
266	Fluorene	86-73-7	D	2600.0	27000.0
267	Fluorine (soluble fluoride)	7782-41-4	D	3900.0	41000.0
268	Fluoridone	59756-60-4	D	5200.0	55000.0
269	Flurprimidol	56425-91-3	D	1300.0	14000.0
270	Flutolanil	66332-96-5	D	3900.0	41000.0
271	Fluvalinate	69409-94-5	D	650.0	6800.0
272	Folpet	133-07-3	B2	1300.0	5500.0
273	Fomesafen	72178-02-0	C	23.0	100.0
274	Fonofos	944-22-9	D	130.0	1400.0
275	Formaldehyde	50-00-0	B1	9800.0	100000.0
276	Formic Acid	64-18-6	D	130000.0	1000000.0
277	Fosetyl-al	39148-24-8	C	200000.0	1000000.0
278	Furan	110-00-9	D	2.5	8.5
279	Furazolidone	67-45-8	B2	1.2	5.0
280	Furfural	98-01-1	D	200.0	2000.0
281	Furium	531-82-8	B2	0.089	0.38
282	Furmecyclox	60568-05-0	B2	150.0	640.0
	G				
283	Glufosinate-ammonium	77182-82-2	D	26.0	270.0
284	Glycidaldehyde	765-34-4	B2	26.0	270.0
285	Glyphosate	1071-83-6	D	6500.0	68000.0
	H				
286	Haloxypop-methyl	69806-40-2	D	3.3	34.0
287	Harmony	79277-27-3	D	850.0	8900.0
288	Heptachlor	76-44-8	B2	0.99	4.2
289	Heptachlor epoxide	1024-57-3	B2	0.49	2.1
290	Hexabromobenzene	87-82-1	D	130.0	1400.0
291	Hexachlorobenzene	118-74-1	B2	2.8	12.0
292	Hexachlorobutadiene	87-68-3	C	13.0	140.0
293	HCH (alpha)	319-84-6	B2	0.71	3.0
294	HCH (beta)	319-85-7	C	2.5	11.0
295	HCH (gamma) Lindane	58-89-9	B2-C	3.4	15.0
296	HCH-technical	608-73-1	B2	2.5	11.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
297	Hexachlorocyclopentadiene	77-47-4	D	450.0	4600.0
298	Hexachlorodibenzo-p-dioxin mixture (HxCDD)	19408-74-3	B2	0.00072	0.0031
299	Hexachloroethane	67-72-1	C	65.0	680.0
300	Hexachlorophene	70-30-4	D	20.0	200.0
301	Hexahydro-1,3,5-trinitro-1,3,5-triazine	121-82-4	C	40.0	170.0
302	* n-Hexane	110-54-3	D	120.0	400.0
303	Hexazinone	51235-04-2	D	2200.0	22000.0
304	Hydrazine, hydrazine sulfate	302-01-2	B2	1.5	6.4
305	Hydrocarbons (C ₁₀ to C ₃₂)	N/A	N/A	4100.0	18000.0
306	Hydrogen chloride	7647-01-0	D	370.0	3900.0
307	Hydrogen cyanide	74-90-8	D	11.0	35.0
308	p-Hydroquinone	123-31-9	D	2600.0	27000.0
	I				
309	Imazalil	35554-44-0	D	850.0	8900.0
310	Imazaquin	81335-37-7	D	16000.0	170000.0
311	Indeno[1,2,3-cd]pyrene	193-39-5	B2	6.1	26.0
312	Iprodione	36734-19-7	D	2600.0	27000.0
313	* Isobutanol	78-83-1	D	11000.0	42000.0
314	Isophorone	78-59-1	C	4700.0	20000.0
315	Isopropalin	33820-53-0	D	980.0	10000.0
316	Isopropyl methyl phosphonic acid	1832-54-8	D	6500.0	68000.0
317	Isoxaben	82558-50-7	C	3300.0	34000.0
	K				
318	Kepone	143-50-0	B, C	0.25	1.1
	L				
319	Lactofen	77501-63-4	D	130.0	1400.0
320	#Lead	7439-92-1	B2	400.0	2000.0
321	Lead (tetraethyl)	78-00-2	D	0.0065	0.068
322	Linuron	330-55-2	C	130.0	1400.0
323	Lithium	7439-93-2	D	1500.0	34000.0
324	Londax	83055-99-6	D	13000.0	140000.0
	M				
325	Malathion	121-75-5	D	1300.0	14000.0
326	Maleic anhydride	108-31-6	D	6500.0	68000.0
327	Maleic hydrazide	123-33-1	D	33000.0	340000.0
328	Malononitrile	109-77-3	D	1.3	14.0
329	Mancozeb	8018-01-7	D	2000.0	20000.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
330	Maneb	12427-38-2	D	330.0	3400.0
331	Manganese and compounds	7439-96-5	D	3200.0	43000.0
332	Mephosfolan	950-10-7	D	5.9	61.0
333	Mepiquat	24307-26-4	D	2000.0	20000.0
334	Mercuric chloride	7487-94-7	C	23.0	510.0
335	Mercury (elemental)	7439-97-6	D	6.7	180.0
336	Mercury (methyl)	22967-92-6	D	6.5	68.0
337	Merphos	150-50-5	D	2.0	20.0
338	Merphos oxide	78-48-8	D	2.0	20.0
339	Metalaxyl	57837-19-1	D	3900.0	41000.0
340	Methacrylonitrile	126-98-7	D	2.0	8.1
341	Methamidophos	10265-92-6	D	3.3	34.0
342	Methanol	67-56-1	D	33000.0	340000.0
343	Methidathion	950-37-8	C	65.0	680.0
344	Methomyl	16752-77-5	D	1600.0	17000.0
345	Methoxychlor	72-43-5	D	330.0	3400.0
346	2-Methoxyethanol	109-86-4	D	65.0	680.0
347	2-Methoxyethanol acetate	110-49-6	D	130.0	1400.0
348	2-Methoxy-5-nitroaniline	99-59-2	C	97.0	410.0
349	Methyl acetate	79-20-9	D	21000.0	88000.0
350	Methyl acrylate	96-33-3	D	69.0	230.0
351	2-Methylaniline (o-toluidine)	100-61-8 <u>95-53-4</u>	B2	19.0	79.0
352	2-Methylaniline hydrochloride	636-21-5	B2	25.0	110.0
353	Methyl chlorocarbonate	79-22-1	D	65000.0	680000.0
354	2-Methyl-4-chlorophenoxyacetic acid	94-74-6	D	33.0	340.0
355	4-(2-Methyl-4-chlorophenoxy) butyric acid (MCPB)	94-81-5	D	650.0	6800.0
356	2-(2-Methyl-4-chlorophenoxy) propionic acid	93-65-2	D	65.0	680.0
357	2-(2-Methyl-1,4-chlorophenoxy) propionic acid (MCPB)	16484-77-8	D	65.0	680.0
358	Methylcyclohexane	108-87-2	D	56000.0	590000.0
359	4,4'-Methylenebisbenzeneamine	101-77-9	D	18.0	76.0
360	4,4'-Methylene bis(2-chloroaniline)	101-14-4	B2	34.0	150.0
361	4,4'-Methylene bis(N,N'-dimethyl)aniline	101-61-1	B2	97.0	410.0
362	Methylene bromide	74-95-3	D	650.0	6800.0
363	Methylene chloride	75-09-2	B2	77.0	180.0
364	Methyl ethyl ketone	78-93-3	D	7100.0	27000.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
365	Methyl hydrazine	60-34-4	B, C	4.0	17.0
366	Methyl isobutyl ketone	108-10-1	D	770.0	2800.0
367	* Methyl methacrylate	80-62-6	D	760.0	2800.0
368	2-Methyl-5-nitroaniline	99-55-8	C	130.0	580.0
369	Methyl parathion	298-00-0	D	16.0	170.0
370	2-Methylphenol	95-48-7	C	3300.0	34000.0
371	3-Methylphenol	108-39-4	C	3300.0	34000.0
372	4-Methylphenol	106-44-5	C	330.0	3400.0
373	Methyl styrene (mixture)	25013-15-4	D	120.0	520.0
374	* Methyl styrene (alpha)	98-83-9	D	890.0	3100.0
375	Methyl tertbutyl ether (MTBE)	1634-04-4	D	320.0	3300.0
376	Metolacolor (Dual)	51218-45-2	D	9800.0	100000.0
377	Metribuzin	21087-64-9	D	1600.0	17000.0
378	Mirex	2385-85-5	B2	2.5	11.0
379	Molinate	2212-67-1	D	130.0	1400.0
380	Molybdenum	7439-98-7	D	380.0	8500.0
381	Monochloramine	10599-90-3	D	6500.0	68000.0
	N				
382	Naled	300-76-5	D	130.0	1400.0
383	Naphthalene	91-20-3	D	2600.0	27000.0
384	Napropamide	15299-99-7	D	6500.0	68000.0
385	Nickel and compounds	7440-02-0	D	1500.0	34000.0
386	Nickel subsulfide	12035-72-2	A	5100.0	11000.0
387	Nitrapyrin	1929-82-4	D	98.0	1000.0
388	Nitrate	14797-55-8	D	100000.0	1000000.0
389	Nitrite	14797-65-0	D	6500.0	68000.0
390	2-Nitroaniline	88-74-4	D	3.9	41.0
391	Nitrobenzene	98-95-3	D	18.0	94.0
392	Nitrofurantoin	67-20-9	D	4600.0	48000.0
393	Nitrofurazone	59-87-0	B2	3.0	13.0
394	Nitroguanidine	556-88-7	D	6500.0	68000.0
395	N-Nitrosodi-n-butylamine	924-16-3	B2	0.22	0.55
396	N-Nitrosodiethanolamine	1116-54-7	B2	1.6	6.8
397	N-Nitrosodiethylamine	55-18-5	B2	0.03	0.13
398	N-Nitrosodimethylamine	62-75-9	B2	0.087	0.37
399	N-Nitrosodiphenylamine	86-30-6	B2	910.0	3900.0
400	N-Nitroso di-n-propylamine	621-64-7	B2	0.63	2.7

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
401	N-Nitroso-N-methylethylamine	10595-95-6	B2	0.20	0.87
402	N-Nitrosopyrrolidine	930-55-2	B2	2.1	9.1
403	m-Nitrotoluene	99-08-1	D	650.0	6800.0
404	p-Nitrotoluene	99-99-0	D	650.0	6800.0
405	Norflurazon	27314-13-2	D	2600.0	27000.0
406	NuStar	85509-19-9	D	46.0	480.0
O					
407	Octabromodiphenyl ether	32536-52-0	D	200.0	2000.0
408	Octahydro-1357-tetranitro-1357- tetrazocine (<u>HMX</u>)	2691-41-0	D	3300.0	34000.0
409	Octamethylpyrophosphoramidate	152-16-9	D	130.0	1400.0
410	Oryzalin	19044-88-3	C	3300.0	34000.0
411	Oxadiazon	19666-30-9	D	330.0	3400.0
412	Oxamyl	23135-22-0	E	1600.0	17000.0
413	Oxyfluorfen	42874-03-3	D	200.0	2000.0
P					
414	Paclobutrazol	76738-62-0	D	850.0	8900.0
415	Paraquat	4685-14-7	C	290.0	3100.0
416	Parathion	56-38-2	C	390.0	4100.0
417	Pebulate	1114-71-2	D	3300.0	34000.0
418	Pendimethalin	40487-42-1	D	2600.0	27000.0
419	Pentabromo-6-chloro cyclohexane	87-84-3	C	190.0	830.0
420	Pentabromodiphenyl ether	32534-81-9	D	130.0	1400.0
421	Pentachlorobenzene	608-93-5	D	52.0	550.0
422	Pentachloronitrobenzene	82-68-8	C	17.0	73.0
423	Pentachlorophenol	87-86-5	B2	25.0	79.0
424	Permethrin	52645-53-1	D	3300.0	34000.0
425	Phenmedipham	13684-63-4	D	16000.0	170000.0
426	Phenol	108-95-2	D	39000.0	410000.0
427	m-Phenylenediamine	108-45-2	D	390.0	4100.0
428	p-Phenylenediamine	106-50-3	D	12000.0	130000.0
429	Phenylmercuric acetate	62-38-4	D	5.2	55.0
430	2-Phenylphenol	90-43-7	C	2300.0	9800.0
431	Phorate	298-02-2	E	13.0	140.0
432	Phosmet	732-11-6	D	1300.0	14000.0
433	Phosphine	7803-51-2	D	20.0	200.0
434	Phosphorus, white	7723-14-0	D	1.5	34.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
435	Phthalic anhydride	85-44-9	D	130000.0	1000000.0
436	Picloram	1918-02-1	D	4600.0	48000.0
437	Pirimiphos-methyl	23505-41-1	D	650.0	6800.0
438	Polybrominated biphenyls (PBBs)	N/A	B2	0.46	2.1
439	Polychlorinated biphenyls (PCBs)	1336-36-3	B2	2.5	13.0
440	Potassium cyanide	151-50-8	D	3300.0	34000.0
441	Potassium silver cyanide	506-61-6	D	13000.0	140000.0
442	Prochloraz	67747-09-5	C	30.0	130.0
443	Profluralin	26399-36-0	D	390.0	4100.0
444	Prometon	1610-18-0	D	980.0	10000.0
445	Prometryn	7287-19-6	D	260.0	2700.0
446	Pronamide	23950-58-5	C	4900.0	51000.0
447	Propachlor	1918-16-7	D	850.0	8900.0
448	Propanil	709-98-8	D	330.0	3400.0
449	Propargite	2312-35-8	D	1300.0	14000.0
450	Propargyl alcohol	107-19-7	D	130.0	1400.0
451	Propazine	139-40-2	C	1300.0	14000.0
452	Propham	122-42-9	D	1300.0	14000.0
453	Propiconazole	60207-90-1	D	850.0	8900.0
454	Propylene glycol	57-55-6	D	1000000.0	1000000.0
455	Propylene glycol, monoethyl ether	111-35-3	D	46000.0	480000.0
456	Propylene glycol, monomethyl ether	107-98-2	D	46000.0	480000.0
457	Propylene oxide	75-56-9	B2	19.0	79.0
458	Pursuit	81335-77-5	D	16000.0	170000.0
459	Pydrin	51630-58-1	D	1600.0	17000.0
460	Pyrene	129-00-0	D	2000.0	20000.0
461	Pyridine	110-86-1	D	65.0	680.0
	Q				
462	Quinalphos	13593-03-8	D	33.0	340.0
463	Quinoline	91-22-5	C	0.37	1.6
	R				
464	RDX (Cyclonite)	121-82-4	C	40.0	170.0
465	Resmethrin	10453-86-8	D	2000.0	20000.0
466	Ronnel	299-84-3	D	3300.0	34000.0
467	Rotenone	83-79-4	D	260.0	2700.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
	S				
468	Savey	78578-05-0 <u>78587-05-0</u>	D	1600.0	17000.0
469	Selenious Acid	7783-00-8	D	330.0	3400.0
470	Selenium	7782-49-2	D	380.0	8500.0
471	Selenourea	630-10-4	D	330.0	3400.0
472	Sethoxydim	74051-80-2	D	5900.0	61000.0
473	Silver and compounds	7440-22-4	D	380.0	8500.0
474	Silver cyanide	506-64-9	D	6500.0	68000.0
475	Simazine	122-34-9	C	37.0	160.0
476	Sodium azide	26628-22-8	D	260.0	2700.0
477	Sodium cyanide	143-33-9	D	2600.0	27000.0
478	Sodium diethyldithiocarbamate	148-18-5	C	16.0	71.0
479	Sodium fluoroacetate	62-74-8	D	1.3	14.0
480	Sodium metavanadate	13718-26-8	D	65.0	680.0
481	Strontium, stable	7440-24-6	D	46000.0	1000000.0
482	Strychnine	57-24-9	D	20.0	200.0
483	* Styrene	100-42-5	C	3300.0	3300.0
484	Systhane	88671-89-0	D	1600.0	17000.0
	T				
485	2,3,7,8-TCDD (dioxin)	1746-01-6	B2	0.000038	0.00024
486	Tebuthiuron	34014-18-1	D	4600.0	48000.0
487	Temephos	3383-96-8	D	1300.0	14000.0
488	Terbacil	5902-51-2	E	850.0	8900.0
489	Terbufos	13071-79-9	D	1.6	17.0
490	Terbutryn	886-50-0	D	65.0	680.0
491	1,2,4,5-Tetrachlorobenzene	95-94-3	D	20.0	200.0
492	1,1,1,2-Tetrachloroethane	630-20-6	C	23.0	54.0
493	1,1,2,2-Tetrachloroethane	79-34-5	C	4.4	11.0
494	Tetrachloroethylene (PCE)	127-18-4	B2	53.0	170.0
495	2,3,4,6-Tetrachlorophenol	58-90-2	D	2000.0	20000.0
496	p,a,a,a-Tetrachlorotoluene	5216-25-1	B2	0.22	0.95
497	Tetrachlorovinphos	961-11-5	C	190.0	790.0
498	Tetraethyldithiopyrophosphate	3689-24-5	D	33.0	340.0
499	Thallic oxide	1314-32-5	D	5.4	120.0
500	Thallium acetate	563-68-8	D	6.9	150.0
501	Thallium carbonate	6533-73-9	D	6.1	140.0

Arizona Administrative Register / Secretary of State

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
502	Thallium chloride	7791-12-0	D	6.1	140.0
503	Thallium nitrate	10102-45-1	D	6.9	150.0
504	Thallium selenite	12039-52-0	D	6.9	150.0
505	Thallium sulfate	7446-18-6	D	6.1	140.0
506	Thiobencarb	28249-77-6	D	650.0	6800.0
507	2-(Thiocyanomethylthio)- benzothiazole (TCMTB)	3689-24-5	D	2000.0	20000.0
508	Thiofanox	39196-18-4	D	20.0	200.0
509	Thiophanate-methyl	23564-05-8	D	5200.0	55000.0
510	Thiram	137-26-8	D	330.0	3400.0
511	Tin and compounds	7440-31-5	D	46000.0	1000000.0
512	* Toluene	108-88-3	D	790.0	2700.0
513	Toluene-2,4-diamine	95-80-7	B2	1.4	6.0
514	Toluene-2,5-diamine	95-70-5	D	39000.0	410000.0
515	Toluene-2,6-diamine	823-40-5	C	13000.0	140000.0
516	p-Toluidine	106-49-0	C	23.0	100.0
517	Toxaphene	8001-35-2	B2	4.0	17.0
518	Tralomethrin	66841-25-6	D	490.0	5100.0
519	Triallate	2303-17-5	D	850.0	8900.0
520	Triasulfuron	82097-50-5	D	650.0	6800.0
521	1,2,4-Tribromobenzene	615-54-3	D	330.0	3400.0
522	Tributyltin oxide (TBTO)	56-35-9	D	2.0	20.0
523	2,4,6-Trichloroaniline	634-93-5	C	130.0	560.0
524	2,4,6-Trichloroaniline hydrochloride	33663-50-2	C	150.0	660.0
525	* 1,2,4-Trichlorobenzene	120-82-1	D	570.0	4700.0
526	* 1,1,1-Trichloroethane	71-55-6	D	1200.0	4800.0
527	1,1,2-Trichloroethane	79-00-5	C	6.5	15.0
528	Trichloroethylene (TCE)	79-01-6	B2	27.0	70.0
529	Trichlorofluoromethane	75-69-4	D	380.0	1300.0
530	2,4,5-Trichlorophenol	95-95-4	D	6500.0	68000.0
531	2,4,6-Trichlorophenol	88-06-2	B2	400.0	1700.0
532	2,4,5-Trichlorophenoxyacetic Acid acid	93-76-5	D	650.0	6800.0
533	2-(2,4,5-Trichlorophenoxy) propionic acid	93-72-1	D	520.0	5500.0
534	1,1,2-Trichloropropane	598-77-6	D	15.0	50.0
535	1,2,3-Trichloropropane	96-18-4	B2	0.014	0.03
536	1,2,3-Trichloropropene	96-19-5	D	11.0	38.0
537	* 1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	D	10000.0	10000.0

Notices of Final Rulemaking

	Chemical Name	Cas-CAS Number	Cancer Group	Residential (mg/ kg)	Non-residential (mg/kg)
538	Tridiphane	58138-08-2	D	200.0	2000.0
539	Triethylamine	121-44-8	D	23.0	84.0
540	Trifluralin	1582-09-8	C	490.0	2500.0
541	Trimethyl phosphate	512-56-1	B2	120.0	520.0
542	1,3,5-Trinitrobenzene	99-35-4	D	3.3	34.0
543	Trinitrophenylmethylnitramine	479-45-8	D	650.0	6800.0
544	2,4,6-Trinitrotoluene	118-96-7	C	33.0	340.0
	V				
545	Vanadium	7440-62-2	D	540.0	12000.0
546	Vanadium pentoxide	1314-62-1	D	690.0	15000.0
547	Vanadium sulfate	13701-70-7	D	1500.0	34000.0
548	Vernam	1929-77-7	D	65.0	680.0
549	Vinclozolin	50471-44-8	D	1600.0	17000.0
550	Vinyl acetate	108-05-4	D	780.0	2600.0
551	Vinyl bromide	593-60-2	B2	1.9	4.1
552	Vinyl chloride	75-01-4	A	0.016	0.035
	W				
553	Warfarin	81-81-2	D	20.0	200.0
	X				
554	* Xylene (mixed)	1330-20-7	D	2800.0	2800.0
	Z				
555	Zinc	7440-66-6	D	23000.0	510000.0
556	Zinc phosphide	1314-84-7	D	23.0	510.0
557	Zinc cyanide	557-21-1	D	3300.0	34000.0
558	Zineb	12122-67-7	D	3300.0	34000.0

* = 1% free-phase analysis

= Based on IEUBK Model

~ = Based on natural background

N/A = Not Applicable

CARCINOGENICITY CLASSIFICATIONS:

A = Known human carcinogen

B1 = Probable human carcinogen, with limited data indicating human carcinogenicity.

B2 = Probable human carcinogen, with inadequate or no evidence of carcinogenicity in humans. Sufficient evidence for carcinogenicity in laboratory animals.

C = Possible human carcinogen.

D = Not classifiable as to human carcinogenicity.

E = Evidence of noncarcinogenicity in humans.

Notices of Final Rulemaking

Appendix C. ~~Cancellation of Voluntary Environmental Mitigation Use Restriction By Owner or Owners~~ Repealed

When recorded, mail to:

~~CANCELLATION OF VOLUNTARY ENVIRONMENTAL MITIGATION
USE RESTRICTION BY OWNER OR OWNERS~~

Pursuant to A.R.S. § 49-152(B), the owner or owners _____
of the following described property:

(Please Print)

(insert legal description of entire parcel)

recorded a Notice of Voluntary Mitigation Use Restriction By Owner or Owners in the Office of the County Recorder of _____
County, Arizona on the _____ day of _____, _____ in Document/Docket _____ at Page _____, affecting the following por-
tion of the above described property:

(insert legal description of remediated portion)

Pursuant to A.R.S. § 49-152(C), the undersigned hereby cancel or cancels the above described notice and declare or declares said notice to
be of no further force and effect as of this _____ day of _____, _____.

Signature of owner

~~STATE OF ARIZONA-~~

County of _____

On this _____ day of _____, 19____, before me personally appeared _____ (name of
signer), whose identity was proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this document,
and who acknowledged that he/she signed the above document.

Notary Public

(Notary Seal)

My commission expires: _____

(ADEQ official)

~~STATE OF ARIZONA-~~

County of _____

Notices of Final Rulemaking

On this _____ day of _____, 19____, before me personally appeared _____ (name of signer), whose identity was proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this document, and who acknowledged that he/she signed the above document.

Notary Public

(Notary Seal)

My commission expires: _____

Please make no marks below this line

NOTICE OF FINAL RULEMAKING

TITLE 19: ALCOHOL, HORSE AND DOG RACING, LOTTERY, AND GAMING

CHAPTER 3: ARIZONA STATE LOTTERY COMMISSION

[R07-59]

PREAMBLE

1. Sections Affected:

- R19-3-701
R19-3-702
R19-3-703
R19-3-704
R19-3-705
R19-3-706
R19-3-707
R19-3-708
R19-3-709

Rulemaking Action

- Amend
Amend
Amend
Amend
Amend
Amend
Amend
Amend
Amend

2. The statutory authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):

Authorizing statute: A.R.S. § 5-504(B)
Specific statute: A.R.S. § 5-504(C)

3. The effective date of the rules:

April 27, 2007

4. A list of all previous notices appearing in the Register addressing the final rules:

- Notice of Rulemaking Docket Opening: 10 A.A.R. 424, February 6, 2004
Notice of Proposed Rulemaking: 10 A.A.R. 4565, November 12, 2004
Notice of Rulemaking Docket Opening: 12 A.A.R. 2775, August 4, 2006
Notice of Proposed Rulemaking: 12 A.A.R. 3794, October 13, 2006

5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: J. Art Macias Jr., Executive Director

Address: Arizona State Lottery
4740 E. University Dr.
Phoenix, AZ 85034

Telephone: (480) 921-4505

Fax: (480) 921-4488

E-mail: amacias@azlottery.gov

or

Name: Pam DiNunzio

Notices of Final Rulemaking

Address: Arizona State Lottery
4740 E. University Dr.
Phoenix, AZ 85034

Telephone: (480) 921-4489

Fax: (480) 921-4488

E-mail: pdinunzio@azlottery.gov

6. An explanation of the rules, including the agency's reason for initiating the rules:

Article 7, Design and Operation of Instant Games, provides for the conduct of the Arizona Lottery's instant games. These rules are being amended to provide consistency with the Lottery's on-line game rules and to include additional game playstyles. Individual game details are fully described in the corresponding Game Profile as required by these rules. The provisions described in these rules explain the common components of instant games: game profiles, game playstyles, determination of a winning ticket, procedures required to claim prizes and the claim period, ticket validation requirements, and disputes concerning a ticket. These rules allow the Lottery to introduce new games in a timely manner and to respond to current market trends as authorized specifically by A.R.S. § 5-504(C).

7. A reference to any study relevant to the rules that the agency reviewed and either relied on in its evaluation of or justification for the rules or did not rely on in its evaluation of or justification for the rules, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

None

8. A showing of good cause why the rules are necessary to promote a statewide interest if the rules will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

9. The summary of the economic, small business, and consumer impact:

The rules for Article 7, Design and Operation of Instant Games, describe various types of Lottery instant ticket games and procedures relating to these games. The Lottery anticipates amendments to this Article will impact the agency, Lottery retailers, Lottery players, and potentially state revenues.

A. The Arizona State Lottery.

Costs to the agency for this Article are included in the agency's appropriated budget. These rules provide for the effective management of the instant ticket product and allow the Lottery to introduce new instant games in a timely manner, thus providing the state and licensed retailers with the potential to increase sales revenue. The Lottery does not anticipate any additional costs to the agency as part of this rulemaking.

B. Businesses Directly Affected by this Rulemaking.

Lottery retailers are the only businesses affected by these rules. The rules specify how a retailer can determine if a ticket is a winning ticket, and if so, the prize amount. These rules allow the Lottery to introduce new instant games in a timelier manner, thus providing licensed retailers with a potential increase in sales revenue. Retailers currently receive \$.065 for each \$1 instant ticket transaction. An increase in instant ticket sales will also increase retailer commissions. In FY06, retailers earned over \$16 million in instant game commissions.

Lottery retailers are also the only small businesses affected by these rules. The impact is anticipated to be the same as discussed above. Small retailers will benefit from the potential to increase sales, resulting in a corresponding increase in retailer commissions.

C. Consumers and the Public.

There are no costs to the public associated with the adoption of these rules. These rules will provide players with additional or enhanced instant ticket games to choose from.

D. State Revenues.

These rules allow the Lottery to respond more effectively to market trends, thus providing the state with the potential to increase sales revenue. Instant ticket sales for FY06 were \$249.8 million, of which \$62.9 million was returned to the state.

This rulemaking clarifies Lottery instant ticket game procedures and will not have any identifiable economic impact on political subdivisions of the state, or private and public employment.

10. A description of the changes between the proposed rules, including supplemental notices, and final rules (if applicable):

In R19-3-706(D), "money order" was added as a method to pay prizes. There are no substantive changes between the final rules and the proposed rules.

11. A summary of the comments made regarding the rules and the agency response to them:

Notices of Final Rulemaking

No oral or written comments were received regarding the rules.

12. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

Not applicable

13. Incorporations by reference and their location in the rules:

None

14. Were these rules previously made as emergency rules?

No

15. The full text of the rules follows:

TITLE 19: ALCOHOL, HORSE AND DOG RACING, LOTTERY, AND GAMING

CHAPTER 3: ARIZONA STATE LOTTERY COMMISSION

ARTICLE 7. DESIGN AND OPERATION OF INSTANT GAMES

Section

R19-3-701.	Definitions
R19-3-702.	Game Profile
R19-3-703.	Game Playstyle
R19-3-704.	Determination of a Winning Ticket
R19-3-705.	Ticket Validation Requirements
R19-3-706.	Ticket Ownership and Payment for Instant Prize Winnings <u>Responsibility; Prize Payment</u>
R19-3-707.	Claim Period
R19-3-708.	Procedure for Claiming Prizes
R19-3-709.	Disputes Concerning a Ticket

ARTICLE 7. DESIGN AND OPERATION OF INSTANT GAMES

R19-3-701. Definitions

In this Article, unless the context otherwise requires:

1. "Caption" means the printed characters appearing below a play symbol or prize symbol that verify and correspond with that symbol. No more than one caption will appear under a symbol.
- ~~1-2.~~ "Game profile" means the written document ~~that includes in which the Lottery Commission authorizes the Director to issue an order that contains all of the non-confidential game information including, but not limited to, the game prize structure, game playstyle, and special game features~~ fundamentals required by these rules for an instant game.
2. "High tier" means any instant game ticket prize of \$600 or more.
- ~~3-3.~~ "Instant game" means a game that is played by removing the protective covering from a ticket to reveal the play ~~and/ or prize symbols~~ symbols, or prize symbols, or both that determine if a ticket holder is entitled to a prize or prizes.
4. "Low tier" means any instant game ticket prize of less than \$100.
5. "Mid tier" means any instant game ticket prize of \$100 or more, up to and including \$599.
- ~~6-4.~~ "Pack" means a group of tickets bearing a common identification number.
- ~~7-5.~~ "Pack-ticket number" means a unique multi-digit number that includes a game number, a pack number, and a ticket number which distinguishes each ticket from every other ticket within an instant game.
- ~~8-6.~~ "PIN" means the designated characters within the validation number that allows an on-line terminal to validate an instant ticket.
- ~~9-7.~~ "Play area" means the portion or portions of the ticket which contains the play symbol or symbols. More than one play area may appear on a ticket.
- ~~10-8.~~ "Play symbols" ~~mean the numbers, letters, symbols, or pictures printed in the play area of each instant ticket~~ means the printed image or images that appear within the defined play area of the ticket that determine if the ticket holder is entitled to a prize or prizes.
11. "Play symbol caption" ~~means the printed characters under the protective covering on the ticket, located immediately below each play symbol, that verify the play symbol. No more than one play symbol caption appears under each play symbol.~~
- ~~12-9.~~ "Prize structure" means the estimated ~~number, number of prizes, value, prize values,~~ and odds of winning prizes for an individual game.
- ~~13-10.~~ "Prize symbols" means ~~a character or characters printed~~ the printed image or images that indicates the prize or prizes available in that game, ~~as described in the Game Profile.~~

Notices of Final Rulemaking

- 14. ~~“Prize symbol caption” means the printed characters under the protective covering on the ticket, located immediately below each prize symbol that verify the prize symbol. No more than one prize symbol caption appears under each prize symbol.~~
- 15. ~~11. “Retailer validation code” means the multiple letters in the play area, under the protective covering that verify low- and mid-tier prize amounts prizes less than \$600.~~
- 16. ~~“Theirs” means the opponent’s play area or areas, (for example, “dealer’s hand(s)”, “house card(s)”, “house roll(s)”).~~
- 17. ~~“Ticket” means paper stock containing a play area or areas and the game play data for an individual game.~~
- 18. ~~“Ticket holder” means a person who has possession of an unsigned ticket, or a person whose signature appears on a signed ticket.~~
- 19. ~~12. “Validation number” means the unique multi-digit code found under the protective covering on each ticket that is used to validate winning tickets.~~
- 20. ~~“Yours” means the ticket holder’s play area or areas (for example, “your hand(s)”, “your card(s)”, or “your roll(s)”).~~

R19-3-702. Game Profile

- ~~A.~~ The Commission shall approve the individual Game Profile prior to the game being introduced to the public for sale.
- ~~B.~~ A. At a minimum, the Game Profile for each game shall contain the following information: Each game shall have a Game Profile and at a minimum, the Profile shall contain the following information:
 - 1. Game name;
 - 2. Game number;
 - 3. Prize structure, ~~including the number and size of prizes available, free tickets, and merchandise prizes, if applicable;~~
 - 4. Game Playstyle;
 - 5. Play symbols, ~~including variant symbol or symbols, if any;~~
 - 6. Retailer validation codes;
 - 7. ~~Special feature;~~ features, if any;
 - 8. Retail sales price;
 - 9. How to play and win instructions;
 - 9. ~~10.~~ Prize draw eligibility requirements, including filing period for eligibility in a winners drawing, if applicable.
- B. The Commission shall approve the individual Game Profile prior to the game being sold to the public.

R19-3-703. Game Playstyle

- A. The playstyle for an individual game shall be fully described in the Game Profile and shall be one of the following methods of play unless a different method is prescribed by another rule:
 - 1. Match Two,
 - 2. Match Three,
 - 3. Add-up,
 - 4. Tic-Tac-Toe,
 - 5. Key Symbol or Symbols Match,
 - 6. Key Symbol or Symbols Beat,
 - 7. Symbols in Sequence,
 - 8. ~~Spellouts;~~ Spell Outs,
 - 9. In Between,
 - 10. ~~Bingo;~~ Bingo,
 - 11. Pattern,
 - 12. Legend,
 - 13. Coordinates,
 - 14. Find,
 - 15. Maze,
 - 16. Grid,
 - 17. Elimination,
 - 18. Sets.
- B. More than one game and more than one playstyle may appear on a ticket.

R19-3-704. Determination of a Winning Ticket

- A. The play symbols are the only determining factor for prize eligibility for a valid ticket.
- B. For each play area on an individual ticket, the player shall remove the protective covering to find the play symbols, or the play and prize symbols. Eligibility to win a prize is based on compliance with the designated playstyle as follows:
 - 1. Match Two. The player shall win the prize or prizes indicated by uncovering ~~2~~ two identical play symbols on a play area.
 - 2. Match Three. The player shall win the prize or prizes indicated by uncovering ~~3~~ three identical play symbols on a play area.
 - 3. Add-Up. The player shall win the prize or prizes indicated in either of the following ways:

Notices of Final Rulemaking

- a. The player adds up the play symbols and the amount is greater than or equal to the designated key symbol on the ticket, or
- b. The player adds up the play symbols designated as “yours” for the player and the total is greater than or equal to the control key symbol or symbols designated as “theirs”.
4. Tic-Tac-Toe. The player shall win the prize or prizes indicated by uncovering ~~3~~ three identical play symbols, in any row, or any column, or any diagonal, on a ~~9-symbol~~ multi-symbol grid on the play area.
5. Key Symbol or Symbols Match. The player shall win the prize or prizes indicated by uncovering ~~a~~ the play symbol or symbols ~~which is~~ identical to the designated key play symbol or symbols.
6. Key Symbol or Symbols Beat. The player shall win the prize or prizes indicated by uncovering the play symbol or symbols designated as “yours” for the player in the ticket play area which is greater than the control play symbol or symbols designated as “theirs”.
7. Symbols in Sequence. The player shall win the prize or prizes indicated by uncovering the designated play symbols in the specified sequential order.
8. ~~Spellouts: Spell Outs.~~ The player shall win the prize or prizes indicated by uncovering the play symbols to form the designated word or words.
9. In Between. The player shall win the prize or prizes indicated by uncovering the play symbol or symbols designated as “yours” for the player with a value less than the highest control play symbol or symbols designated as “their high card” and greater than the lowest control play symbol or symbols designated as “their low card”.
10. Bingo. The player shall win the prize or prizes indicated by uncovering the play symbols on the “Caller’s Card” designated play area or areas that are identical to the play symbols ~~on one or more of the~~ “Player’s Card” which are located on the “Player’s Card” in one or more of the following ways as indicated on the ticket: uncovered on the control play area to form the specified pattern or patterns.
 - a. Five consecutive play symbols, including the “free” play symbol, if appropriate, in any horizontal, vertical, or diagonal line; or
 - b. Play symbols in all 4 corners; or
 - e. All 5 consecutive play symbols in the top row, the bottom row, and the 1st and 5th columns, forming an outer frame pattern; or
 - d. The 2nd, 3rd, and 4th play symbols in the 2nd row, the 4th row, the 2nd column, and the 4th column forming an inner frame pattern; or
 - e. The 1st, 2nd, 4th, and 5th play symbols in the 1st, 2nd, 4th, and 5th rows, forming a box pattern in each of the 4 corners; or
 - f. The 3rd play symbol in the 1st and 5th rows, the 2nd and 4th play symbols in the 2nd and 4th rows, and the 3rd play symbol in the 1st and 5th rows, forming a diamond pattern; or
 - g. The 3rd, 4th, and 5th play symbols in the 1st and 5th rows, the 2nd and 3rd play symbols in the 2nd and 4th rows, the 3rd play symbol in the 1st row, and the “free” play symbol, forming an “A” pattern; or
 - h. The 1st, 2nd, 3rd, 4th, and 5th play symbols in the 1st and 5th rows, and the 1st play symbols in the 2nd, 3rd, and 4th rows, forming a “C” pattern; or
 - i. The 1st, 2nd, 3rd, 4th, and 5th play symbols in the 1st column, and the 2nd, 3rd, 4th, and 5th play symbols in the 5th row, forming an “L” pattern; or
 - j. The 1st, 2nd, 3rd, 4th, and 5th play symbols in the 1st and 5th columns, and the 3rd play symbol in the 2nd and 4th columns, and the “free” play symbol, forming an “H” pattern; or
 - k. The 1st, 2nd, 3rd, 4th, and 5th play symbols in the 1st row, and the 2nd play symbol in the 3rd column, the “free” play symbol, and the 4th and 5th play symbols in the 3rd column, forming a “T” pattern; or
 - l. Five consecutive play symbols in both diagonals forming a “X” pattern; or
 - m. The 1st, 2nd, 3rd, 4th, and 5th play symbols in the 1st row and 5th row, the 2nd play symbol in the 4th column, the “free” play symbol, and the 4th play symbol in the 2nd column, forming a “Z” pattern; or
 - n. The 1st, 2nd, 3rd, 4th, and 5th play symbols in the 1st row, the 2nd play symbol in the 4th column, the “free” play symbol, the 4th play symbol in the 2nd column, and the 5th play symbol in the 1st column, forming a “7” pattern; or
 - o. All of the play symbols in the 1st, 2nd, 3rd, 4th, and 5th rows, and the “free” play symbol, creating a “blackout”.
11. Pattern. The player shall win the prize or prizes indicated by uncovering the play symbol or symbols on a multi-symbol play area that follow a designated pattern.
12. Legend. The player shall win the prize or prizes indicated by uncovering the designated number or type of play symbols that correspond to a legend.
13. Coordinates. The player shall win the prize or prizes indicated by uncovering a play symbol or symbols that direct the player to a location on the play area to reveal the specified play symbol, or the number or pattern of play symbols.
14. Find. The player shall win the prize or prizes indicated by uncovering the designated play or prize symbol.
15. Maze. The player shall win the prize or prizes indicated by uncovering the directional symbols to make a path or paths leading to a designated prize symbol.

Notices of Final Rulemaking

16. Grid. The player shall win the prize or prizes indicated by uncovering a specified number or pattern of play symbols on a grid on the play area.
 17. Elimination. The player shall win the prize indicated by uncovering the corresponding prize or symbol on a prize table to eliminate all but one remaining prize amount or symbol.
 18. Sets. The player shall win the prize or prizes indicated by uncovering the designated group or groups of play symbols, without repetition or deletion of any play symbol, within a specified location of the play area.
- C. Each of the playstyles described in subsection (B) may include a specific variant such as "automatic win feature", "doubler feature", "wild card", or "free space" that provides added or alternative methods of winning. one or more special features such as "automatic win," "multiplier," "wild," "win all," "extra chance," or "free space" that provides an added or alternative method of winning.

R19-3-705. Ticket Validation Requirements

- A. Each instant game ticket shall be ~~valid and~~ validated prior to payment of a prize.
- B. To be a valid ticket, all of the following requirements shall be met eligible for a prize, a ticket holder must present a ticket meeting all of the following requirements:
1. The ticket shall not be stolen or appear on any list of omitted tickets on file with the ~~Arizona State Lottery Commission;~~
 2. The ticket shall not be counterfeit or forged, in whole or in part;
 3. The ticket shall not be mutilated, altered, unreadable, reconstituted, or tampered with in any manner;
 4. The ticket shall not be blank, partially blank, misregistered, defective, or printed or produced in error;
 5. The play and prize symbols shall have the captions that confirm and agree with those applicable to that instant game;
 6. The ticket shall have been issued by the ~~Arizona State Lottery Commission~~ in an authorized manner;
 7. The ticket shall have been legally obtained;
 8. The ticket shall pass ~~the all other~~ confidential validation and security tests ~~appropriate to the applicable playstyle determined by the Director;~~
 9. The ticket shall be validated in accordance with the provisions of sections R19-3-706 and R19-3-708.
 - ~~9-10.~~ The display printed on the ticket shall correspond precisely with the approved artwork on file at the ~~Arizona State Lottery Commission;~~
 - ~~10-11.~~ The validation number of a winning ticket shall appear in the ~~Arizona State Lottery Commission's Lottery's~~ official file of validation numbers of winning tickets. ~~A ticket with that validation number shall and shall not have been paid previously;~~
 - ~~11-12.~~ All of the ticket symbols originally printed on the ticket shall appear in the play area on the ticket and shall correspond to those shown in the Game Profile;
 - ~~12-13.~~ The play and prize symbols shall have the required captions that confirm and agree with those of the appropriate instant game;
 - ~~13-14.~~ The ticket shall contain ~~exactly one ticket validation number, one retailer validation code, one a game number, one a pack-ticket number, a retailer validation code, a and one PIN number and at least one ticket validation number. The play and prize symbols, the play and prize symbol captions, ticket validation number, retailer validation code, game number, pack-ticket number, and PIN number shall be right side up and not reversed in any manner.~~
- C. If the ticket fails to pass any of the requirements in Section R19-3-705(B), the ticket is void and ineligible for any prize payout.

R19-3-706. Ticket Ownership and ~~Payment for Instant Prize Winnings~~ Responsibility; Prize Payment

- A. If the winning ticket was purchased by a group of players, the group shall designate one of the claimants to sign the ticket. Each claimant shall complete an individual form to receive the claimants' portion of the prize. Until a ticket is signed, the ticket is owned by its physical possessor.
- B. The Arizona State Lottery Commission shall only make payment to the claimant, less any authorized debt set off amounts, who is also the ticket holder. The Director shall recognize as the owner of a winning instant ticket the person whose signature appears upon the ticket in the area designated for that purpose.
1. If more than one signature appears on the ticket, the Director is authorized to require that one or more of those claimants be designated to receive the payment. A claim form shall be submitted by each claimant who is designated to receive a portion of the prize claimed from the winning ticket.
 2. Prior to payment of a prize, a claimant who has signed the ticket may designate another claimant to receive the prize by signing a relinquishment of claim statement.
 3. When the winning ticket was purchased by a group of players, the group shall designate one of the claimants to sign the ticket for the group. Each claimant shall complete an individual claim form to receive the claimant's portion of the prize.
 4. In the event there is an inconsistency in the information submitted on a claim form and as shown on the winning instant ticket, the Director shall authorize an investigation and withhold all winnings payable to the ticket owner or holder until such time as the Director is satisfied that the proper person is being paid.

Notices of Final Rulemaking

- C. ~~Prior to payment of a prize, a claimant who has signed the ticket may designate another claimant to receive the prize by signing a relinquishment of claim statement. Prior to paying the claimant a prize of \$600 or more, the Lottery shall match the winner's name against the lists of persons owing a debt to a participating state agency, furnished to the Lottery under A.R.S. § 5-525.~~
1. If there is a match on any of the claims submitted with a ticket, the amount that is owed shall be deducted from the prize due the claimant.
 2. The claimant shall be notified in writing of the amount of the setoff and the agency to which it shall be paid.
 3. If the claimant has two or more agencies which are owed a debt, the Lottery shall pay a pro-rata share to each of the agencies, except that a Department of Economic Security overdue child support setoff shall be paid in full before any amount shall be paid to another agency.
 4. The claimant shall be notified in writing that a right to appeal the setoff exists and must be commenced within 30 days of the receipt of this notification. The notification shall include the name and address of the agency with which to file the appeal.
 5. If, after deducting withholding taxes and the setoff, a portion of the prize remains then that portion shall be paid to the winner with the notification of setoff.
 6. The amount of setoff shall be forwarded to the agency, and that agency shall be responsible for any appeal and crediting of the payment against the amount owed or refunding any amount to the winner.
 7. Upon a determination that a setoff is due, the winner loses the right under subsection (B)(2) to assign any portion of the claim.
- D. Prizes shall be paid by cash, check, money order, or if requested by the player, by Lottery tickets.
1. If a ticket contains more than one winning game play, any prize amounts shall be combined and paid in accordance with the prize payment limits specified in Section R19-3-708.
 2. Each winning game play wins the prize amount specified in the Game Profile.
- E. The Lottery is not responsible for lost or stolen tickets.

R19-3-707. Claim Period

- A. In order for the claimant to receive payment, a winning instant game ticket shall be received by the ~~Arizona State Lottery Commission~~ or a retailer no later than 5:00 p.m. (Phoenix time) on the 180th calendar day following the announced end of the instant game.
- B. If a claimant presents a valid winning ticket to a retailer for payment on the 180th calendar day following the announced end of the instant ticket game and is not paid the prize, the Director is authorized to pay the prize if the claimant presents the valid winning ticket to the Lottery no later than 5:00 p.m. (Phoenix time) on the following business day.
- ~~B.C.~~ In the case of a drawing prize, the claimant must claim the prize no later than 5:00 p.m. (Phoenix time) on the final day designated by the Director and on file at the ~~Arizona State Lottery Commission~~.
- ~~C.D.~~ The end of an instant game shall be designated by the Director and on file at the ~~Arizona State Lottery Commission~~.
- D. ~~The Director is authorized to place any person's eligible entry that was not entered in the grand prize drawing into a subsequent grand prize drawing or drawings which have an equal or greater grand prize value.~~

R19-3-708. Procedure for Claiming Prizes

- A. ~~To claim a low or mid-tier instant game cash prize, a claimant may take the ticket to a retailer or to a Lottery office, or mail the ticket to a Lottery office for validation. If the claim is verified and the ticket is validated as a winning ticket, the Arizona State Lottery Commission or the retailer shall make payment of the amount due to the claimant. If the retailer does not verify the claim, validate the ticket, or pay the amount due, the claimant may take or mail the ticket to a Lottery office for verification and validation. If the ticket is validated in accordance with these rules, the claimant shall receive payment. To claim a prize of up to and including \$599, the claimant shall present the ticket to any participating licensed retailer or to a Lottery office, or mail the ticket to a Lottery office for validation. The licensed retailer shall pay a winner a prize up to and including \$100 and may pay a winner a prize up to and including \$599 provided that:~~
1. All of the ticket validation criteria in Section R19-3-705 have been satisfied; and
 2. A proper validation slip, which is an authorization to pay, has been issued by the terminal.
- B. ~~To claim a high tier instant game prize, the claimant shall sign the back of the ticket, and take or mail the ticket and claim form to a Lottery office for validation. If the claim is verified and the ticket is validated as a winning ticket, the Arizona State Lottery Commission shall make payment of the amount due to the claimant. The claimant shall be notified if the ticket is not validated as a winning ticket by the Arizona State Lottery Commission. To claim a prize that the retailer does not validate or is not authorized to pay, including all prizes of \$600 or more, the claimant shall submit a claim form, available from any retailer, and the ticket to the Lottery. If the claim is:~~
1. Verified and validated by the Lottery as a winning ticket, the Lottery shall make payment of the amount due to the claimant, less any authorized debt setoff amounts, or withheld taxes, or both.
 2. Denied by the Lottery, the claimant shall be notified within 15 days from the day the claim is received in the Lottery office.
- C. If a prize winner dies prior to receiving full payment, the ~~Arizona State Lottery Commission~~ shall pay all remaining prize

Notices of Final Rulemaking

money to the prize winner’s beneficiary or to any person designated by an appropriate judicial order.

- D. The Arizona State Lottery Commission shall be is discharged of all liability upon payment of the prize money.
E. Payment of prize money shall not be accelerated ahead of its normal date of payment.

R19-3-709. Disputes Concerning a Ticket

- A. If a dispute between the Arizona State Lottery Commission and a claimant occurs concerning a ticket, the Director is authorized to replace the disputed ticket with a ticket or tickets of equivalent sales price from any current instant game.
B. If a defective ticket is purchased, the Arizona State Lottery Commission shall replace the defective ticket with a ticket or tickets of equivalent sales price from any current instant game.
C. The Arizona State Lottery Commission shall not be liable for paying the difference in a prize amount previously paid to a claimant and the actual amount that should be paid unless the claimant provides documentation establishing:
1. That the claimant was paid the lesser amount; and
2. That the claimant is entitled to a greater amount, according to the records on file at the Arizona State Lottery Commission and the criteria set forth in these rules and in orders for the game approved by the Arizona State Lottery Commission pursuant to A.R.S. § 5-504(C).

Replacement of the disputed ticket is the sole and exclusive remedy for a claimant.

- D. If a dispute between the Lottery and a claimant occurs concerning the eligibility of an entry into a second chance or promotional drawing, the Director is authorized to place any person’s eligible entry that was not entered in that drawing into any subsequent drawing or drawings.

NOTICE OF FINAL RULEMAKING

TITLE 20. COMMERCE, FINANCIAL INSTITUTIONS, AND INSURANCE

CHAPTER 1. DEPARTMENT OF COMMERCE

[R07-89]

PREAMBLE

1. Sections Affected

- Article 8
R20-1-801
R20-1-802
R20-1-803
R20-1-804
R20-1-805
R20-1-806
R20-1-807
R20-1-808
R20-1-809
R20-1-810
R20-1-811
R20-1-812

Rulemaking Action

- New Article
New Section

2. The statutory authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):

Authorizing statute: A.R.S. § 41-1504(B)(4)
Implementing statute: A.R.S. § 41-1505.03

3. The effective date for the rules:

May 5, 2007

4. List of all previous notices appearing in the Register addressing the final rules:

Notice of Rulemaking Docket Opening: 12 A.A.R. 2850, August 11, 2006
Notice of Proposed Rulemaking: 12 A.A.R. 3801, October 13, 2006

5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: Thomas Doyle
Address: Department of Commerce
1700 W. Washington St., Ste. 420

Notices of Final Rulemaking

Phoenix, AZ 95007

Telephone: (602) 771-1212

Fax: (602) 771-1210

E-mail: Thomasd@azcommerce.com

6. An explanation of the rules, including the agency's reasons for initiating the rulemaking:

In this rulemaking, the Department of Commerce addresses accreditation of rural entities for participation in the Rural Economic Development Initiative program. Annually, the Department accredits two entities that the Department determines are ready for economic development. The rulemaking establishes accreditation-eligibility criteria, application procedures, and selection criteria.

7. A reference to any study relevant to the rules that the agency reviewed and either relied on in its evaluation of or justification for the rules or did not rely on in its evaluation of or justification for the rules, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

None

8. A showing of good cause why the rules are necessary to promote a statewide interest if the rules will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

9. The summary of the economic, small business, and consumer impact:

The rules, which are procedural, will have minimal economic impact. However, accreditation by the Department's REDI program has major economic benefits for an entity. The program provides direct assistance in managing an economic development program, evaluating community resources, and targeting strategies to increase job opportunities and investment in the entity. The program also provides matching grant funding for consulting services, resource document development, marketing activities, and specific studies or projects that have statewide benefit. An entity that applies for accreditation will do so voluntarily because the entity believes the benefits from accreditation outweigh the costs of making application.

10. A description of the changes between the proposed rules, including supplemental notices, and final rules (if applicable):

Only minor, non-substantive changes were made between the proposed and final rules.

11. A summary of the comments made regarding the rules and the agency response to them:

No public comments were received.

12. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

None

13. Incorporations by reference and their location in the rule:

None

14. Were these rules previously made as emergency rules?

No

15. The full text of the rules follows:

TITLE 20. COMMERCE, BANKING, AND INSURANCE

CHAPTER 1. DEPARTMENT OF COMMERCE

ARTICLE 8. RURAL ECONOMIC DEVELOPMENT INITIATIVE PROGRAM

Section

<u>R20-1-801.</u>	<u>Definitions</u>
<u>R20-1-802.</u>	<u>Entities Accredited before the Effective Date of this Article</u>
<u>R20-1-803.</u>	<u>Accreditation Prerequisites</u>
<u>R20-1-804.</u>	<u>Annual Application Period</u>
<u>R20-1-805.</u>	<u>Application for REDI Accreditation</u>
<u>R20-1-806.</u>	<u>Application Processing and Time-frames</u>
<u>R20-1-807.</u>	<u>Scoring Applications for Accreditation</u>
<u>R20-1-808.</u>	<u>Department Responsibilities</u>

- R20-1-809. Continuing Accreditation Requirements
R20-1-810. Eligibility for Program Grants
R20-1-811. Revocation of Accreditation
R20-1-812. Appeals

ARTICLE 8. RURAL ECONOMIC DEVELOPMENT INITIATIVE PROGRAM

R20-1-801. Defintions

The definitions in A.R.S. § 41-1501 apply to this Article. Additionally, in this Article:

“Accredited” or “accreditation” means certified by the Department as meeting all the requirements in this Article for participation in REDI.

“Economic development program” means a plan of work for accomplishing economic goals and objectives.

“Entity” means:

A city, town, or county governmental jurisdiction or an organization of city, town, or county governmental jurisdictions;

A tribal jurisdiction or tribal subdivision recognized by the governments of the United States and Arizona; or

A non-profit organization authorized by and partnering with a governmental jurisdiction.

“Governing organization” means a group with legal authority to raise and administer public or private funds and to set and implement policy for an entity.

“Metropolitan Phoenix” means the following communities:

Avondale.

Carefree.

Cave Creek.

Chandler.

El Mirage.

Fountain Hills.

Gilbert.

Glendale.

Goodyear.

Guadalupe.

Litchfield Park.

Mesa.

Paradise Valley.

Peoria.

Phoenix.

Scottsdale.

Sun City.

Sun City West.

Surprise.

Tempe.

Tolleson, and

Youngtown.

“Metropolitan Tucson” means the following communities:

Marana.

Oro Valley.

Tucson, and

South Tucson.

“Program manager” means the individual authorized by the governing organization to represent an accredited entity or an entity seeking accreditation and who maintains contact with the Department.

“REDI” means the Rural Economic Development Initiative Program.

Notices of Final Rulemaking

“Rural” means having a population of less than 50,000 according to the most recent U.S. decennial census and geographically located outside metropolitan Phoenix and metropolitan Tucson.

R20-1-802. Entities Accredited before the Effective Date of this Article

- A.** An entity accredited before the effective date of this Article is not required to apply and compete for accreditation under this Article if the entity is eligible under subsection (B) and provides the notice required under subsection (C).
- B.** An entity accredited before the effective date of this Article is eligible to continue accreditation only if the entity has done the following within the 12 months before the effective date of this Article:
 - 1. Participated in at least 50 percent of the conference calls scheduled by the Department;
 - 2. Notified the Department of any change in program manager; and
 - 3. Attended at least one of the following: the REDI annual meeting, REDI-sponsored training, or financial or economic development conference sponsored by the Department.
- C.** To continue accreditation, the program manager of an entity that is eligible under subsection (B) shall provide to the Department written notice of intent to continue participation within 45 days after the effective date of this Article.
- D.** The Department shall issue a written notice of accreditation under this Article to the program manager and governing organization of an entity that is eligible under subsection (B) and provides the notice required under subsection (C). The Department shall issue a written notice of revocation of accreditation to the program manager and governing organization of an entity that is not eligible under subsection (B) or does not provide the notice required under subsection (C).

R20-1-803. Accreditation Prerequisites

- A.** An entity that does not meet the requirements of R20-1-802 may receive accreditation only by complying with the competitive application requirements of this Article.
- B.** The Department shall not accept an application for accreditation from an entity unless the entity:
 - 1. Is rural or is an organization of rural entities;
 - 2. Has an economic development program;
 - 3. Designates a program manager; and
 - 4. Dedicates local staff resources to REDI as follows:
 - a. If the entity has a population of less than 25,000, at least one part-time staff person, who may be a volunteer;
 - b. If the entity has a population of more than 25,000 but less than 50,000, at least one part-time employee; or
 - c. If the entity is an organization of rural entities with a combined population of 50,000 or more, at least one full-time employee.

R20-1-804. Annual Application Period

- A.** The Department shall accredit only two entities each year after the effective date of this Article.
- B.** The Department shall announce the annual application period and deadline for applications for REDI accreditation by written notice to all rural entities in the state.
- C.** At its annual Rural Development Conference, the Department shall conduct a pre-application workshop to provide information on the program and application requirements.

R20-1-805. Application for REDI Accreditation

- A.** To apply for REDI accreditation, the program manager shall submit to the Department an original and four copies of the following:
 - 1. A completed, typed application form, which is available from the Department, that provides the information required under subsection (B);
 - 2. The narrative listed in subsection (C);
 - 3. The supporting documents listed in subsection (D);
 - 4. If applicable, the plan required under subsection (E); and
 - 5. If desired, the supporting materials listed in subsection (F).
- B.** The program manager shall provide the following information on the application form:
 - 1. Date of application;
 - 2. Name of the entity making application;
 - 3. County in which the applicant entity is located;
 - 4. Population of the applicant entity, as reported in the most recent U.S. decennial census;
 - 5. The following information about the program manager:
 - a. Name,
 - b. Title,
 - c. Name of the organization employing the program manager;
 - d. Mailing address,
 - e. Telephone and fax numbers,
 - f. E-mail address, and
 - g. Signature.

Notices of Final Rulemaking

- C.** The program manager shall submit a narrative containing:
1. What the entity expects to achieve through REDI accreditation;
 2. A description of current entity development and economic trends;
 3. How the current development and economic trends are expected to be affected by REDI;
 4. A description of the major assets and challenges of the entity;
 5. An identification of any other organization within the entity that has programs or activities that could affect economic development, a description of the programs or activities, and the manner in which the other organization was informed about this application;
 6. The following information, if applicable, about an existing industrial park within the entity:
 - a. Square footage of the industrial park facility;
 - b. Infrastructure supporting the industrial park;
 - c. The number of businesses by type within the industrial park; and
 - d. Size of the land parcel on which the industrial park facility is located and value of the land;
 7. Whether the entity received grants or monies for economic development from any other governmental unit within the last three years and if so:
 - a. The amount of monies received;
 - b. How the monies were used; and
 - c. A description of results obtained with the monies;
 8. A description of how local governmental units have previously supported economic development; and
 9. A description of the entity's business assistance program.
- D.** The program manager shall submit the following supporting documents:
1. A resolution supporting participation from the entity's governing organization;
 2. The entity's current economic development program, including:
 - a. Mission statement;
 - b. Goals and objectives;
 - c. Implementation strategy;
 - d. Annual evaluation process, and
 - e. Projected annual budget;
 3. Resolutions or letters of support for REDI participation from organizations that will participate with the entity in REDI;
 4. The comprehensive plan of the community or county in which the entity is located;
 5. Documentation of the entity's legal status if the entity is a non-profit organization;
 6. The entity's budget for the current and two preceding years;
 7. Documentation of funding commitments for REDI; and
 8. Resumé of professional staff who will be assigned to REDI;
- E.** If the entity is a group of governmental jurisdictions applying for regional REDI accreditation, the program manager shall submit a written plan regarding:
1. Managing and pooling resources;
 2. Adding or removing a governmental jurisdiction from the group and providing notice of the change to the Department;
 3. Promoting equitable treatment of the various governmental jurisdictions; and
 4. Resolving conflict within the group.
- F.** The program manager may submit the following in support of the entity's application:
1. A map and inventory of industrial and commercial sites and buildings;
 2. A marketing plan;
 3. An analysis of the target market for new business attraction and development;
 4. Promotional materials for economic development, if any
 5. A list of members of a local client or development team; and
 6. An assessment of telecommunication infrastructure capabilities and needs.

R20-1-806. Application Processing and Time-frames

- A.** The Department shall perform an administrative review of each application within 45 days of the application deadline under R20-1-804 and provide each program manager with written notice stating whether the application is accepted for scoring or rejected. The Department shall include with any notice of rejection the reason that the application did not meet the requirements of R20-1-805. The Department shall not accept another application from a rejected entity until the next application period.
- B.** The Department shall score all completed applications within 90 days of the close of the administrative completeness review period, using the criteria in R20-1-807 to determine which entities to accredit.
- C.** At the end of the 90 days under subsection (B), the Department shall provide written notice of the score to entities and advise whether they have been accredited.

R20-1-807. Scoring Applications for Accreditation

The Department shall use the criteria in this Section to score an application for accreditation. The Department shall score each criterion using a scale of zero to 10 points. The Department shall accredit annually the two entities receiving the highest score.

1. How well defined is the entity's expectation of and plan for participating in REDI?
2. To what extent does the entity demonstrate current economic and development trends within REDI parameters?
3. To what extent is there potential for REDI to affect the entity's current economic and development trends?
4. To what extent has the entity identified major assets and challenges that will facilitate or benefit from REDI participation?
5. How accurately were other organizations within the entity that have programs or activities that could affect economic development identified? Was there documentation that these organizations were informed of the REDI application?
6. Has the entity received grants or monies for economic development from another governmental unit? If so, how well were the monies used and to what extent were intended results obtained?
7. To what extent have local governmental units or organizations within the entity previously supported economic development?
8. To what extent are local governmental units and organizations within the entity currently providing assistance to existing businesses?
9. To what extent has the entity demonstrated budget and funding commitments necessary to support REDI participation?
10. If the entity is a group of governmental jurisdictions, to what extent has the entity developed an adequate plan for coordination and cooperation among the group members?

R20-1-808. Department Responsibilities

- A.** Except for an entity accredited under R20-1-802, the Department shall conduct an evaluation within one year of accrediting an entity and issue a written report containing findings and recommendations.
- B.** The Department shall publish at least annually a schedule of conference calls, meetings, conferences, and other events available and required to maintain accreditation. The Department shall include in the schedule the dates grants may become available for accredited entities. The Department shall make the schedule available during business hours and post it on the Department's web site.
- C.** The Department shall visit each accredited entity at least annually to assess implementation of REDI.
- D.** The Department shall send a reminder notice to each program manager regarding the annual letter of intent described in R20-1-809(G).

R20-1-809. Continuing Accreditation Requirements

- A.** To remain accredited, an entity shall meet the participation and reporting requirements of this Section.
- B.** An accredited entity shall authorize a new program manager within 15 days after a vacancy occurs in the program manager position. The accredited entity shall provide immediate written notice to the Department of the new program manager's name, mailing address, e-mail address, and telephone and fax numbers.
- C.** An accredited entity shall ensure that a designated representative attends an annual meeting with the Department to establish goals and objectives for the following year.
- D.** An accredited entity shall ensure that a designated representative attends at least one conference scheduled by the Department addressing financial management and economic development.
- E.** An accredited entity shall ensure that a designated representative participates in monthly conference calls with the Department.
- F.** If an accredited entity receives a grant from REDI, the accredited entity shall use the REDI logo authorized by the Department in all program promotional or marketing material paid for with the grant of REDI funds. An accredited entity may, but is not required to use the REDI logo in promotional or marketing material that is not paid for with a grant of REDI funds.
- G.** An accredited entity shall submit annually a letter indicating whether the entity intends to continue participating in REDI.
- H.** An accredited entity that grows to a population of more than 50,000 retains its accreditation as long as it meets the requirements of this Section.

R20-1-810. Eligibility for Program Grants

- A.** Except as provided in subsection (C), an accredited entity may apply for grant funding according to the schedule under R20-1-808. The Department shall award grants, when funding is available, under the procedures in A.R.S. § 41-2701 et seq.
- B.** To receive a grant, an accredited entity shall match grant dollars as follows:
 1. If the accredited entity has a population of less than 25,000, the accredited entity shall match 50 percent of grant dollars;
 2. If the accredited entity has a population of 25,000 or more but less than 50,000, the accredited entity shall match 100 percent of grant dollars;
 3. If the accredited entity is an organization of governmental jurisdictions each of which has a population of less than

Notices of Final Rulemaking

25,000, the accredited entity shall match 50 percent of grant dollars:

4. If the accredited entity is an organization of governmental jurisdictions each of which has a population of 25,000 or more but less than 50,000, the accredited entity shall match 100 percent of grant dollars; and
5. If the accredited entity has grown to a population of more than 50,000 since accreditation, the accredited entity shall match 100 percent of grant dollars.

C. The Department shall suspend an accredited entity's eligibility for grants if the accredited entity fails to meet the requirements of R20-1-809. The Department shall provide written notice to the entity's governing organization and program manager explaining the requirement that must be met and allowing 30 days from the date of the written notice to comply. If the accredited entity does not comply by the date specified in the notice, the Department shall provide written notice to the entity's governing organization and program manager that grant eligibility is suspended until compliance is achieved and provide notice of revocation of accreditation under R20-1-811.

R20-1-811. Revocation of Accreditation

- A.** The Department shall provide written notice to the governing organization and program manager of an accredited entity that fails to comply with R20-1-809 for 120 days. The Department shall include a copy of this Section with the notice.
- B.** The program manager may provide the Department with a written statement of intent to maintain accreditation within 60 days of the date of the Department's notice under subsection (A).
- C.** If the Department does not receive the statement of intent to maintain accreditation described in subsection (B), the Department shall provide written notice to the entity's governing organization and program manager that the entity is no longer accredited. To become accredited again, the entity shall meet all of the competitive application requirements of this Article.
- D.** If the program manager provides a statement of intent to maintain accreditation, the accredited entity has 120 days from the date of the statement to be in full compliance with R20-1-809.
- E.** If the accredited entity is not in full compliance with R20-1-809 within the 120 days provided under subsection (D), the Department shall provide written notice to the entity's governing organization and program manager that the entity is not accredited. To become accredited again, the entity shall meet all of the competitive application requirements of this Article.

R20-1-812. Appeals

- A.** An entity whose accreditation is revoked or whose eligibility for grant funding is suspended by the Department may file an appeal with the Department by submitting a letter to the Director providing the reason for appealing the decision within 30 working days from the date on the written notice.
- B.** The Director shall review the substance of the appeal and respond in writing within 30 working days after receiving the appeal letter.
- C.** An appeal of the Director's decision is conducted under A.R.S. Title 41, Chapter 6, Article 10, and the rules established by the Office of Administrative Hearings.